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DOCTORAL THESIS

An investigation of undergraduate student self-employment intention and the impact of entrepreneurship education and previous entrepreneurial experience

McStay, Dell

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**An investigation of undergraduate student
self-employment intention and the impact of
entrepreneurship education and
previous entrepreneurial experience**

Presented By

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Submitted in partial fulfilment of the requirements of the degree of

Doctor of Philosophy

School of Business

Bond University

The Australia

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1. INTRODUCTION TO THE THESIS

1.1 ENTREPRENEURSHIP

Entrepreneurship is a worldwide phenomenon with economic growth across the globe positively impacted by the emergence of new and innovative business start-ups. These new small businesses play a significant role in job creation, influencing politicians to recognise and support entrepreneurial start-up activity due to its positive contribution to the economy. Historically, economists have supported the view that entrepreneurship is responsible for economic expansion (Cole, 1965; Weber, 1930) due to its association with profit orientation, capital investment and the creation of new markets (Cantillon, 1755; Schumpeter, 1934).

Australia is documented as a country populated with a significant number of small businesses (Landstrom, 2005. p115). In reference to the number of businesses, their proportion of employment and GDP in 2006 was approximately 1.8 million small businesses (ABS) in a population of approximately 20 million residents. The past decade has seen an increasing acknowledgement by the Australian government of the need for entrepreneurial activities as a means to global competitiveness (NICTIA, 2007). The Global Entrepreneurship Monitor (GEM) is a research program providing an annual assessment of the national level of entrepreneurial activity. The GEM (2006), including research collected from over forty countries, states that as much as one-third of the differences in economic growth among nations may be due to differences in entrepreneurial activity. Thus, governmental units, society, and educational institutions worldwide have documented that the individual entrepreneur is critical in the development of new business ventures (Hisrich, Peters and

Shepherd 2005).

Entrepreneurship as an academic discipline is still considered relatively new although its origin can be traced back to the seventeenth century, when economist Richard Cantillon coined the term, '*entrepreneur*' (Cantillon, 1755). The individual entrepreneur has been studied in numerous studies using a variety of different methodologies and yet, arriving at the conclusion that one psychological profile or definition of the entrepreneur exists has been a seemingly impossible task (Begley and Boyd, 1987; Brockhaus, 1982; Low and MacMillan, 1988). Thus, the psychological approach in entrepreneurship research has moved away from the investigation of personality traits alone, to the exploration of behaviour, motivation and cognition (Shaver and Scott, 1992). Research into the motivation and cognitions of entrepreneurs is an approach that attempts to understand more about the antecedents to entrepreneurial behaviour than the personality characteristics/profile of entrepreneurs.

Studies considering individuals' entrepreneurial intentions is one of the more recent approaches to understanding the entrepreneurial process and has been adopted by several authors (Autio et al., 2001 Davidsson, 1995; Krueger and Brazeal, 1994; Peterman and Kennedy, 2003; Shapero, 1982; Zhao et al., 2005). An individual's entrepreneurial intention claims to be a moderate predictor of future entrepreneurial behaviour (Ajzen, 1991; Kim and Hunter, 1993). Using a sample of American students facing career decisions Krueger et al. (2000) found that intentions models offered strong statistical support for predicting entrepreneurial behaviour. Understanding the antecedents of entrepreneurial intentions increases our understanding of intended entrepreneurial behaviour. Accordingly, entrepreneurial intentions helps explain why many entrepreneurs decide to start a

business even before they begin an opportunity search (Krueger et al., 2000). The development of a new business requires individuals to make conscious choices and decisions and is a deliberate behaviour that is intentional by nature. Therefore, it would seem logical that intentions could provide valuable insights into the type of individuals attracted to becoming entrepreneurs.

Shapero and Sokol (1982) have developed a model of 'entrepreneurial event formation' considering life-path changes and their impact on the individual's perceptions of desirability and perceptions of feasibility related to new venture formation. This model assumes that life-changes (displacement) precipitate a change in entrepreneurial intention and subsequent behaviour. Displacement can occur in either a negative form (e.g., loss of a job) or a positive form (e.g., financial support). The intention to become self-employed and form a new venture and/or business therefore depends on the individual's perceptions of desirability (e.g., 'do I want to do it?') and feasibility (e.g., 'do I have the resources to do it?') in relation to the activity of starting a business.

The Theory of Planned Behaviour (Ajzen, 1991) is another intentions model and has been used for its predictive power and applicability across a variety of content domains including entrepreneurship. Based on the beliefs, attitudes and intentions relationship, a person's beliefs and attitudes regarding a particular behaviour inform their intention to perform that behaviour. In the entrepreneurship context this means an entrepreneurs' beliefs and attitudes regarding entrepreneurship form their intention to become self-employed and create new ventures. Krueger et al. (2000) examined the Theory of Planned Behaviour's predictive ability in relation to intentions to start a business and confirmed that attitude and

perceived behavioural control were significantly related to entrepreneurial intention. Researchers in the field of entrepreneurship have used both or a combination of the Shapero and Ajzen models with results indicating that for self-employment intentions the two models can be successfully integrated into one (Kolveroid et al., 2006; Krueger et al., 2000).

Previous research has shown that numerous forces play a significant role in determining whether a person chooses to be self-employed or to work for some-one else. It would appear that career choice is a cognitive process driven by beliefs, attitudes and experiences and prior research confirms that entrepreneurial careers fit a similar pattern (Davidsson 1991; Katz 1992; Shaver and Scott 1992). Social Cognitive Career Theory (SCCT) also provides a framework to understand the processes through which individuals form interests and make choices in relation to occupational pursuits (Lent, Brown and Hackett, 1994). SCCT focuses on an individual's personal background and learning experiences as influencing factors on career choice behaviour. This research considers the influence of both entrepreneurship education and previous entrepreneurial experience as exogenous factors that may shape an individual's cognitive process of self-employment intention. Krueger et al. (2000) found that personal and situational variables indirectly influenced entrepreneurial intentions through influencing key attitudes and perceptions. Accordingly, entrepreneurship education and previous entrepreneurial experience will affect entrepreneurial intentions only if they change key attitudes and perceptions such as, perceived desirability of self-employment and perceived entrepreneurial self-efficacy. This research explores the role of these exogenous factors in the formation of undergraduate students' self-employment intentions.

Hatten and Ruhland (1995) reported that participation in a Small Business Institute educational programme enhanced senior students' entrepreneurial attitude. This study and others (Krueger, 1993; Peterman and Kennedy, 2003) suggest that entrepreneurship education is an important exogenous factor to include in entrepreneurial intentions models as an event influencing participants' attitude towards and perceptions of entrepreneurship.

1.2 ENTREPRENEURSHIP EDUCATION

Worldwide, the increasing awareness of the importance of entrepreneurship from public authorities has contributed to the continued growth in the numbers of colleges and universities offering entrepreneurship courses. Given that these educational programs are developed to teach and encourage entrepreneurial behaviour understanding their impact on the factors that influence and shape individuals' intentions to choose self-employment as a career are critical.

Entrepreneurship education is an important component of business school education (Kolveroid and Moen, 1997) providing a stimulus for individuals making career choices to consider self-employment thereby increasing new venture creation and economic growth. Research in the field of entrepreneurship education is still developing with the first dedicated conference 'IntEnt' (Internationalising Entrepreneurship Education and Training) taking place in 1994. The complex question of 'how to learn' and 'how to teach' entrepreneurship (Fayolle and Klandt, 2006) continues to drive this stream of research. Several studies support the idea that elements of entrepreneurship can be experientially acquired and taught (Drucker, 1985; Gorman, Hanlon and King, 1997; Kuratko, 2005; Rondstat, 1987) and

therefore highlight the notion that individuals' entrepreneurial intentions can be influenced by training and support (Henry et al., 2003). Along with these findings comes the challenge for academics to provide useful and effective entrepreneurship education with the aim to providing students the skill-set and entrepreneurial attitude required to enable them to develop careers in enterprise.

In response to the growth and availability of entrepreneurship education, there have been an increasing number of students showing interest in entrepreneurial careers (Brenner et al., 1991; Kolveroid, 1996), yet despite a few of the notable studies mentioned earlier, empirical research exploring the impact of such programmes, including the influence of participants' previous entrepreneurial experience towards attitudes and perceptions of self-employment has been limited.

1.3 PREVIOUS ENTREPRENEURIAL EXPERIENCE

Research has shown that an individual's past business experience influences their decision-making and business performance (Dyke et al., 1992). Numerous studies isolating the reasons why individuals become entrepreneurs have also identified previous exposure to business, role models and networks as important (Hisrich and Brush, 1994; Kets de Vries, 1977; Scherer et al., 1989; Scott and Twomey, 1988; Taylor and Thorpe, 2004). Taylor and Thorpe (2004) proposed that an individual's networks act as a resource for information that can influence decision-making throughout the entrepreneurial process. Personal, family and peer influences can affect graduates' entrepreneurial motivation and career aspirations (Matlay, 2006) in both a positive or a negative way and thus previous exposure to family

business and role models is an important area to investigate further in relation to an individual's self-employment intentions.

1.4 DEVELOPMENT OF THE RESEARCH MODEL

The intentions models of Shapero and Sokol (1982) and Ajzen (1991) discussed earlier (see Figures 1.1 and 1.2 below) have included additional variables to those used in this thesis and have been implemented in several studies dealing with the antecedents to entrepreneurial intention (Kolveroid and Isaksen, 2006). The additional variables of interest applied in the intentions model used in this study are an individual's previous entrepreneurial experience and the experimental treatment – 'entrepreneurship education' (See Figure 1.3).

Fig. 1.1 (SEE) Shapero's Entrepreneurial Event (Shapero and Sokol, 1982).

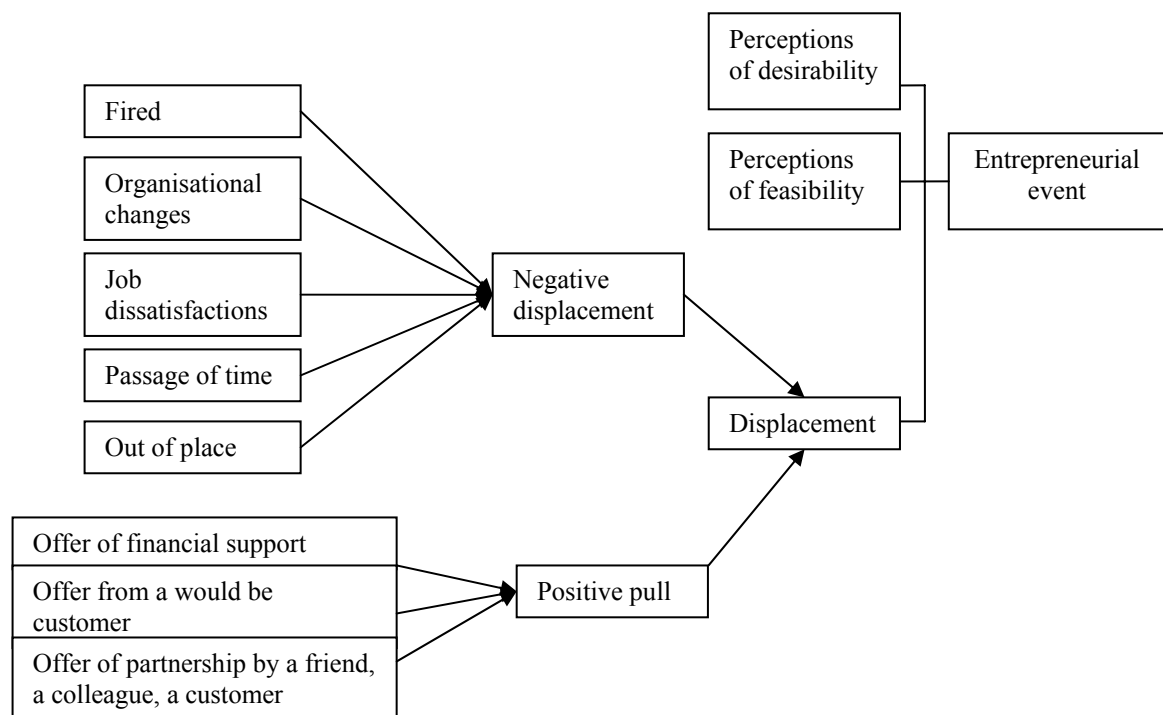


Figure 1.2 (TPB) The Theory of Planned Behaviour (Ajzen, 1991).

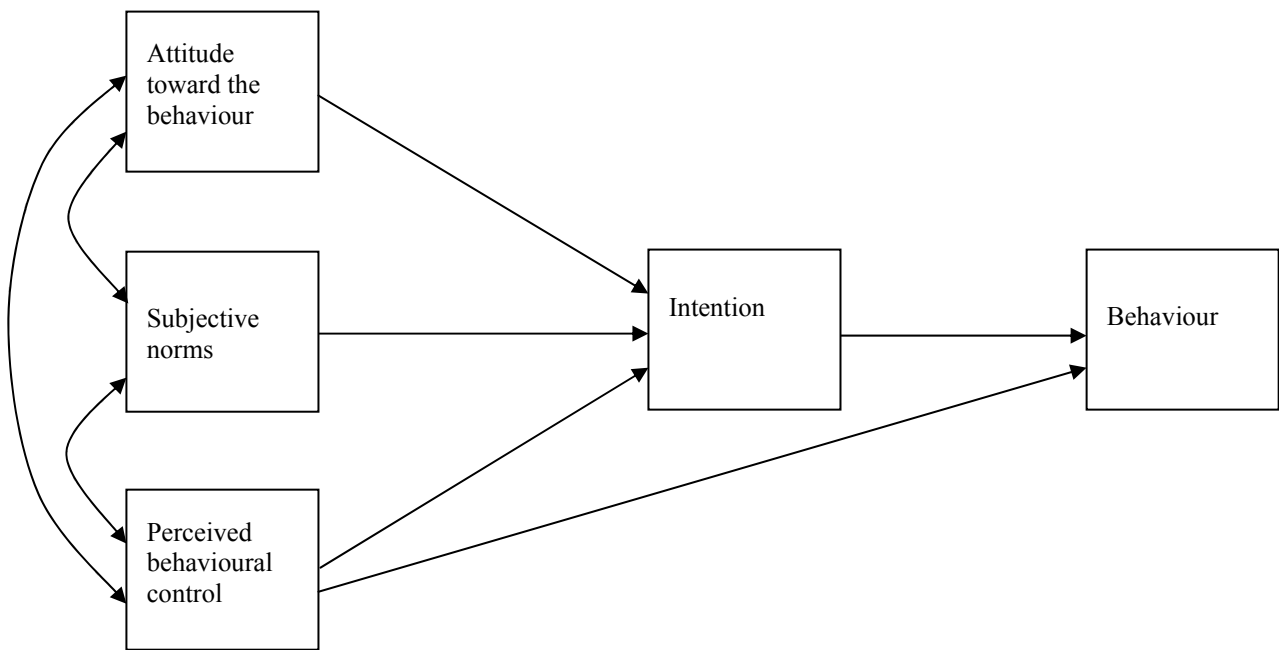
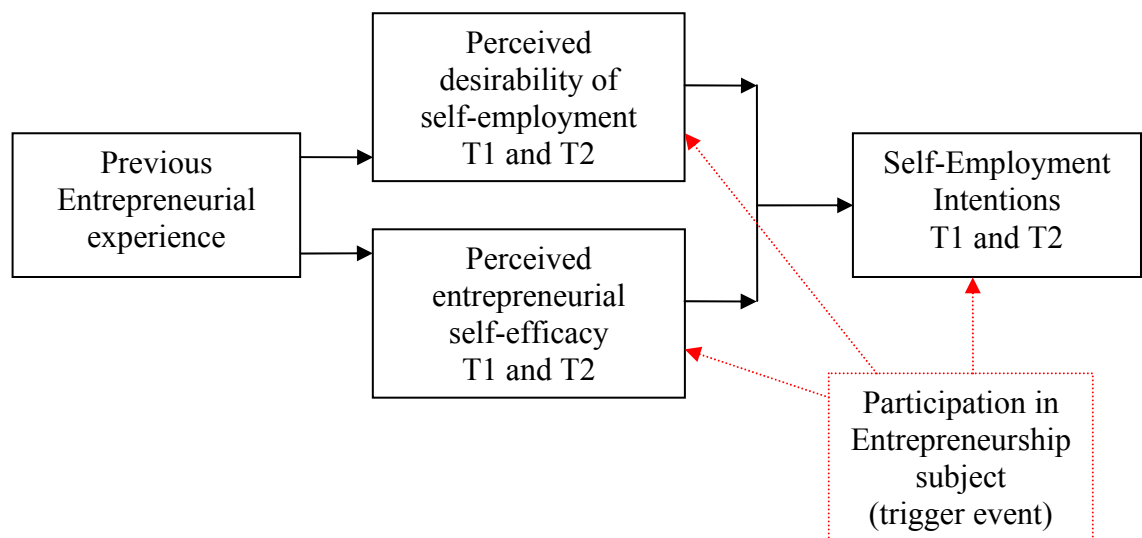


Figure 1.3: Modified self-employment intentions model



The modified intentions model (Figure 1.3) includes previous entrepreneurial experience measured at Time 1; perceived desirability of self-employment measured at Time 1 and Time 2; perceived entrepreneurial self-efficacy measured at Time 1 and Time 2; and

entrepreneurial intentions measured at Time 1 and Time 2. Entrepreneurship education is another addition to the previous models (SEE and TPB) and is explored from an intervention perspective.

In the model for this research (Fig.1.3) perceived entrepreneurial self-efficacy replaces perceived behavioural control in the TPB model (Fig.1.2) and perceptions of feasibility in the SEE model (Fig.1.1). In support of this change, a meta-analysis by Armitage and Conner (2001) confirmed that self-efficacy is more succinctly defined and more strongly correlated with intention than perceived behavioural control, and that perceived feasibility of self-employment and perceived entrepreneurial self-efficacy whilst not identical are highly correlated. In summary, the combined intentions model used in this research explores students' attitude towards entrepreneurship which determines their desirability of self-employment and their perceived entrepreneurial self-efficacy which determines feasibility of self-employment; where in turn, desirability and feasibility determine intention to be self-employed.

The intention to be self-employed is a necessary antecedent to the actual behaviour of choosing self-employment as a career option. In support of this intentions-based research and the probability of intentions leading to actual behaviour, Kolveroid and Isaksen (2006) established that new business founders' intentions to become self-employed were strongly associated with subsequent actual behaviour. The research hypotheses are explained in the following section.

1.5 RESEARCH PROBLEM AND QUESTIONS

In the United States of America one-third of new entrepreneurs are younger than age 30, with more than 60 percent of 18 to 29 year-olds reporting they want to own their own businesses (Kuratko, 2005). Despite these encouraging numbers, Hisrich and Peters (2002) stated that many students do not consider entrepreneurship as a career and that very few will start a business immediately after graduation. Given the importance of new business start-ups to the economy and society this is a problem and is a research area requiring further attention. To understand more about this problem it is important to know more about university students' career intentions and the impact of their individual environments.

The decision by an individual to become an entrepreneur is at the core of entrepreneurship. Harvey and Evans (1995) posit there are unique times in ones' career life cycle when the opportunity to become an entrepreneur is most favourable, considering one of the first 'strategic windows' to be the 'college experience'. Tertiary students are typically contemplating career options leading-up to and after graduation. Gorman, Hanlon and King (1997) reviewed a decade of the literature in entrepreneurship education confirming that preliminary evidence suggests entrepreneurial attributes can be influenced through entrepreneurship education however stated that a stronger empirical focus was required in future research.

The empirical research in this thesis considers self-employment as an entrepreneurial career option and looks at the impact of entrepreneurship education on students' self-employment intentions. Of particular interest in this research is who (in terms of their pre-existing

entrepreneurial experience) is likely to benefit most from entrepreneurship education being an influencer on individuals' self-employment intention. Therefore, this current study uses an intentions-based model to answer the following questions:

1. How does participation in a fourteen week entrepreneurship subject impact students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions?
2. What role does previous entrepreneurial experience play in students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions?
3. Is the level of prior entrepreneurial experience contributory to the level of students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions?
4. Does students' perceived desirability of self-employment, and perceived entrepreneurial self-efficacy impact their self-employment intentions?

1.6 PURPOSE AND CONTRIBUTION

Three central constructs – perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions – and how previous entrepreneurial experience and exposure to entrepreneurship education play a role are the focus of this research. This study was designed to contribute to the

understanding of entrepreneurial intentions. It has been widely accepted that entrepreneurial intentions are formed as a result of an individuals' perception of and attitude toward entrepreneurship (Katz, 1992; Krueger and Carsrud, 1993; Tkashev and Kolveroid, 1999). One of the objectives is the examination of the influence of entrepreneurship education on student's attitudes and perceptions towards entrepreneurship and their self-employment intentions. We know that key attitudes and intentions toward behaviour are driven by perception and as such can be influenced (Ajzen, 1991) and that an individual's situational perceptions based on experiences both past and current can influence their entrepreneurial intention (Krueger and Brazeal 1994). That said, entrepreneurship education appears to be a promising tool that is available to increase an individual's central attitudes, perceptions and intentions towards self-employment.

The backgrounds of university students are heterogeneous, which leads to the suggestion that differences in previous business experiences might explain variance in their self-employment intentions. The question of whether students' previous entrepreneurial experience and participation in entrepreneurship education impacts their self-employment intentions is an important one. There are implications for policy makers, educators, researchers and business owners themselves if entrepreneurial experience, or different levels of business experience, are found to be predictive of early entrepreneurial intention. The relevant types of experience could be used as a basis for tailoring specific educational programs aimed at students to increase the likelihood of eminent new venture creation.

The interaction of previous business experience and the impact of entrepreneurship education on individuals' intentions to be self-employed is a research area that has not

been addressed and requires further attention. Therefore the purposes of this study are as follows:

1. To test the impact of entrepreneurship education on undergraduate students' perceived desirability of self-employment, students' perceived entrepreneurial self-efficacy and students' self-employment intentions.
2. To assess the extent to which previous levels of entrepreneurial experience in the form of existence of a role model, family business experience, and work experience have on students' perceived desirability of self-employment, students' perceived entrepreneurial self-efficacy and students' self-employment intentions.
3. To examine the influence of undergraduate students' perceived desirability of self-employment and students' perceived entrepreneurial self-efficacy on self-employment intentions.
4. To offer further validation of previous entrepreneurial intentions studies and to add to the current literature to facilitate a better understanding of factors influencing the antecedents to entrepreneurial behaviour.

In summary, a unique set of individuals possessing a combination of previous relevant business experience and knowledge may be likely candidates to engage in entrepreneurial behaviour at some stage in their life cycle. Tertiary students are at a critical juncture in their life cycle with regard to career decision-making (Harvey and Evans, 1995). The intention to be self-employed may be formed by a 'trigger event' (Shapero and Sokol, 1982) that changes an individual's situation or future plans; eg. choice of future employment. It is possible that

participation in entrepreneurship education be considered a ‘trigger event’, particularly if other situational conditions exist; eg. family business experience, existence of a role model, previous work experience. As a result, an individual’s self-employment intentions may surface. The following sample and methodology have been used to explore this proposition further.

1.7 RESEARCH METHODOLOGY

For the purposes of this research, entrepreneurial intention is defined as the intention to become self-employed. This encompasses individuals who would consider starting their own business following graduation or at some stage in the foreseeable future. This research is focussed on understanding more about the path to entrepreneurship and the self-employment intentions of a sample of undergraduate students studying in a first year introductory entrepreneurship or strategic management subject. By understanding the relationships between students’ attitude towards and perceptions of entrepreneurship, taking into account their previous business experience and the impact of entrepreneurship education on their self-employment intentions, this study extends the current body of research in this area.

1.7.1 SAMPLE

Research participants are undergraduate students participating in the Entrepreneurship and Strategic Management subjects at an Australian university across two semesters in 2006. All undergraduate students in the university are required to take one or the other of these subjects, and with few exceptions, it is the student’s choice which to take. These first-year classes provide a sample of students studying Bachelor degrees in any one of

the following disciplines: Business, Law, Information Technology, Journalism, Communication, International Relations, Sports Science, Bio Medicine, Film and Television, Social Science and the Arts. Whilst these are not all business degrees, it is conceivable that any of these students might consider self-employment as a career option within their specialised fields.

Students from two successive semesters of both the strategic management and the entrepreneurship subjects participated in the research. This student population provided a total sample of four hundred and twenty nine survey respondents; one hundred and ninety two in the first semester and two hundred and thirty five in the second semester. Combining the two semesters one hundred and ninety students were in the treatment group and two hundred and thirty-nine students were in the control group.

1.7.2 METHOD

The hypotheses were tested using a pretest-posttest non-equivalent control group design where participants in two groups, the treatment and the control group, were surveyed measuring the variables specified in the model at Time 1 and at Time 2.

The treatment group consisted of undergraduate students taking the first-year Entrepreneurship subject and the control group consisted of undergraduate students taking the first-year Strategic Management subject. The inclusion of students from the strategic management course provided a suitable control group to compare the experiment effect of entrepreneurship education due to the homogeneity of both groups. According

to Sekaran (2000) a representative sample should allow findings from the sample to be generalised to the population under investigation. The treatment and the control groups are both comprised of young adults facing career decisions, and therefore are representative of the population of interest.

Because individuals were not randomly assigned to the groups, selection might be considered a threat to the internal validity of the research design. However, not so in this case as pre-existing differences between the groups were measured before exposure to the treatment (Judd et al.. 1991), so each participant served as his or her own control.

1.7.3 THE PROCEDURE

The instructors for each of the courses used in the study remained the same for each group over the two semesters. The data were collected by an independent person during scheduled lecture periods in weeks two and twelve of the fourteen week semesters. Ethical clearance was obtained from the university and the survey was administered following strict professional guidelines. An overview of the nature of the study was provided to students and clear instructions were given that participation was entirely voluntary.

The next section concludes Chapter One highlighting the organisation of this thesis.

1.8 STRUCTURE OF THE THESIS

The remainder of this thesis is organised as follows:

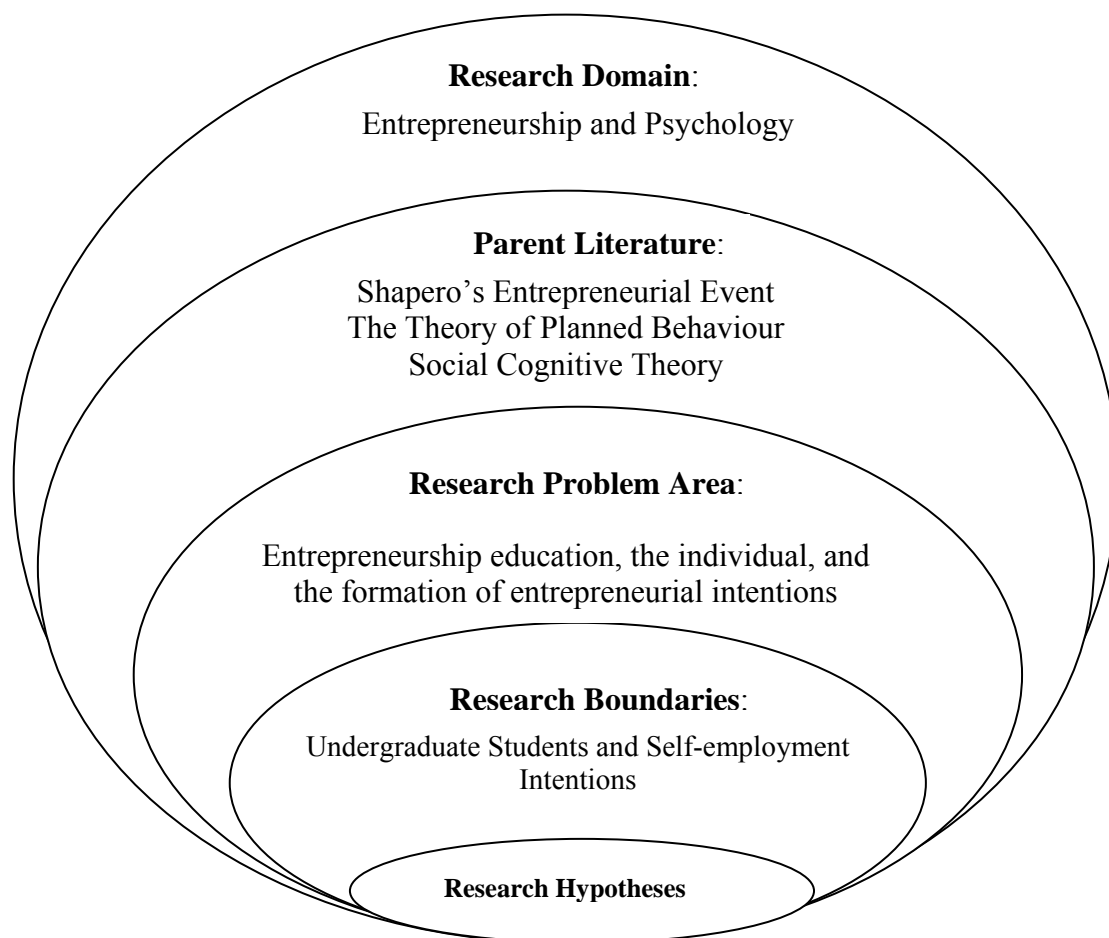
Chapter Two presents a review of the research domain and the parent literature related to the research problem. The foundation theories, entrepreneurship, and entrepreneurship education literature is reviewed with the research boundaries stated. The theoretical and practical foundations are laid and the research hypotheses are introduced. Chapter Three describes the pretest-posttest experimental research methodology employed to test the hypotheses. Chapter Four discusses the results and Chapter Five concludes the thesis with the data analysis, the research's limitations, and a summary of the research's contributions to practice and knowledge including suggestions for future research.

2. THEORY DEVELOPMENT

2.1 INTRODUCTION TO THE CHAPTER

The preceding chapter provided an overview of this thesis and identified the research problem and contribution. This chapter provides a review of the research related to entrepreneurship and the research problem and is organised into sections in accordance with the theoretical framework in figure 2.1. These sections include (1) entrepreneurship and the relevant Psychological literature, (2) the foundation theories, (3) entrepreneurship education, the individual and entrepreneurial intent, (4) a summary of the research boundaries, and (5) introduction to the revised conceptual model and related research hypotheses.

Figure 2.1: Model of the Theoretical Framework for the Thesis



The discussion that follows, while comprehensive, is not an attempt to examine all the definitions and views of entrepreneurship; more importantly it is a discussion that will provide a revision of the mainstream entrepreneurship literature. This overview precedes the specific theoretical foundation for this research.

2.2 THE RESEARCH IN ENTREPRENEURSHIP

Entrepreneurship has emerged as an important force in global economic growth. Entrepreneurship as an academic discipline is still considered relatively new although its origin can be traced back to the seventeenth century, when economist Richard Cantillon coined the term, '*entrepreneur*' (Cantillon, 1755). The literal definition of this French term is '*to undertake*' or '*go between*' referring to the position an individual assumed when pursuing an opportunity. A person took on the associated risk but did not necessarily provide the capital – they were the '*go between*' (Hisrich, Peters, and Shepherd, 2005). Since this early period, the extant literature has been crowded with a variety of different definitions, domains, and contexts of entrepreneurship (Gartner, 1988; Davidsson, 2003a), in part due to the fact that entrepreneurship is a multi-faceted phenomenon borrowing from several academic disciplines (Low and MacMillan, 1988).

Entrepreneurship studies have been influenced by the economics, psychology, sociology and strategic management literatures providing established theoretical frameworks and methodological tools (Gustafsson, 2004). This multi-disciplinary approach is not surprising given the complexity of the phenomenon entrepreneurship. Chandler and Lyon (2001) see the multi-disciplinary approach to entrepreneurship in a positive light suggesting this is one

of the strengths of the field of entrepreneurship as it considers and borrows frameworks and methodologies from other legitimate social sciences. In contrast, others (Cooper, 2003; Shane and Venkataraman, 2000) have appealed for researchers to develop a conceptual framework to provide entrepreneurship with a general paradigm and theory of its own.

One of the main issues hindering progress in the establishment of a general paradigm for the discipline is the lack of consensus regarding the definition of the term ‘entrepreneurship’. In a review of textbooks and journals, Morris (1998) found in excess of seventy different definitions of entrepreneurship in a five-year period. Davidsson (2005) suggests a clearer division be made between entrepreneurship as a social phenomenon and entrepreneurship as a scholarly domain. In his opinion, Kirzner’s (1979) definition of entrepreneurship as behaviours that ‘*drive the market process*’ distinguishes the role of entrepreneurship in society based on outcomes, while in the scholarly domain behaviours related to decision-making and action are of interest irrespective of whether they produce outcomes or not.

Furthermore, varying levels of analysis have been used by researchers in entrepreneurship and the uniqueness of entrepreneurship as a research discipline can be attributed to the role of individuals combined with opportunity identification in the entrepreneurial process - referred to by Ekhardt and Shane (2003) as ‘the individual-opportunity nexus’. Entrepreneurship involves innovative individuals and the presence of profitable opportunities in a dynamic market (Venkataraman, 1997).

Despite past controversy over definition, the field is maturing and it is widely accepted that

there are three underlying approaches in the entrepreneurship literature (Landstrom, 2005, p13): (1) entrepreneurship as a function of the market (2) entrepreneurship as a process, and (3) the entrepreneur as an individual. Sections 2.2.1 and 2.2.2 briefly overview the research on entrepreneurship as: (a) a function of the market, and (b) as a process; the entrepreneur as an individual is central to this thesis and is discussed in more depth in Section 2.4.

2.2.1 ENTREPRENEURSHIP AS A FUNCTION OF THE MARKET

The concept of entrepreneurship as a function of the market represents the occurrence of entrepreneurial action irrespective of who the actor is (Martinelli, 1994; McMullen and Shepherd, 2006). The central theme is the economic function of the entrepreneur rather than his or her personality type (Hebert and Link, 1989). In this context the entrepreneur acts as an agent, gathering information and allocating resources to profit from the opportunities arising from the gaps in supply and demand in the market.

Joseph Schumpeter, noted economist, highlighted the role of creative destruction and innovation in the creation of these new opportunities, viewing entrepreneurship as new combinations of resources, in the form of a) a new good, b) a new method of production, c) opening of a new market, d) discovery of new sources of supply, and e) development of a new venture. The view of innovation being integral to entrepreneurship was also shared by Knight (1921), Drucker (1985) and Baumol (1993). Drucker, in line with Schumpeter (1934), highlighted the importance of diversity in knowledge and viewed market competition as an endless dynamic process (Kiessling and Richey, 2004). Furthermore Baumol (1993) noted the importance of ‘optimal timing’ in the introduction of an innovation. Schumpeter (1934)

also suggested that entrepreneurs, through innovation, produce economic change and create disequilibrium in the economy; in contrast Kirzner (1979) stated that entrepreneurs restore equilibrium by increasing the efficiency of resource allocation when acting on profit-making opportunities already overlooked in the market. Kirzner's work focuses solely on opportunity discovery, entrepreneurial alertness and opportunism, not considering the interrelated processes of evaluation and exploitation better explained by the process approach to entrepreneurship discussed later in this research.

In summary, entrepreneurship as a function of the market relates to the role of entrepreneurship as a societal phenomenon clearly defining it in a market opportunity context, separating the individual entrepreneurs as '*suppliers who exercise entrepreneurship*' (Davidsson, 2003, p.318). The central issue in this context is whether or not entrepreneurial action occurs, not who does it, or how; the latter question is best answered by the process approach discussed next.

2.2.2 ENTREPRENEURSHIP AS A PROCESS

Defining entrepreneurship in terms of the entrepreneurial process has provided a popular context for entrepreneurship research and is represented in the literature through two different approaches: (1) the sequence of events related to new venture creation and (2) the process involving opportunity identification and evaluation. Numerous models and approaches to the entrepreneurial process exist in the literature (Ardichvili et al., 2003; Bhawe, 1994; Gartner, 1985; Morris et al., 1994; Rondstat, 1984; Timmons, 1994). This work contributes to the interconnected processes of business opportunity discovery and

exploitation and is based on a multi-dimensional perspective and a range of diverse factors. *‘The entrepreneurial process is a dynamic, discontinuous change of state involving numerous antecedent variables’*. (William D. Bygrave, 1993, p.181) Table 2.1 provides an overview of six different models of the entrepreneurial process and their approaches.

Table: 2.1

Author/s	Approach	Overview
Rondstat (1984)	New venture creation and opportunity	Use of quantitative, qualitative, strategic and ethical assessments to achieve ‘the entrepreneurial edge’
Gartner (1985)	New venture creation	Emphasises the individual, the environment, the organisation and the venture process
Morris, Lewis, and Sexton (1994)	New venture creation	Theoretical and practical concepts based on inputs (the entrepreneurial process) and outcomes (entrepreneurial intensity)
Bhave (1994)	New venture creation	Iterative, nonlinear model introducing differing amounts of novelty at different stages during venture creation
Timmons (1994)	New venture creation and opportunity	A holistic and integrated approach combining the entrepreneur, his/her team, the opportunity and the resources
Ardichvili, Cardozo, and Ray (2003)	Opportunity identification	Identifies entrepreneur's personality traits, social networks, and prior knowledge as antecedents of entrepreneurial alertness to business opportunities

See Appendices A to D for selected diagrams of the theoretical models listed above.

Rondstat's assessment approach (see Appendix A) considers the stage of the individual's entrepreneurial career along with a series of assessments in conjunction with the type of entrepreneur, the type of venture and the state of the environment, to create a concept of 'entrepreneurial edge'. A more comprehensive approach was taken by Gartner (1985) where specific factors under each of the four main dimensions – the individual, the organisation, the environment and the process, are interactive in describing the phenomenon of new venture creation. Bhav's (1994) model presents two paths to opportunity recognition and exploitation: external and internal. In the external path the business exists and an opportunity is subsequently found. In the internal path opportunity recognition precedes the business start-up. In both cases opportunities are characterised by three different stages - recognition, evaluation and exploitation.

Morris et al. (1994) produced an integrative model of entrepreneurial inputs and outcomes (see Appendix B) that can be applied to both entrepreneurship and intrapreneurship (entrepreneurial action within the organisation). It was developed around the concepts of the entrepreneurial process and entrepreneurial intensity. Inputs include environmental opportunities, entrepreneurial individuals, an organisational context, unique business concepts and resources; outcomes include a going venture, value creation, new products and services, processes, technologies, profits and/or personal benefits, and employment asset and revenue growth. The driving forces model of entrepreneurship developed by Timmons (1994) considers many of the same concepts as the latter integrative model, however in a more simplified format. Most important in the Timmons model is the concept of

fit between the entrepreneur, his team and resources, and the opportunity and the environment. Ardichvili et al. (2003) developed a framework to further the theory in the area of opportunity identification. Their model proposes entrepreneurial alertness as a necessary condition for the success of an opportunity, from recognition and development through to evaluation. The model shows entrepreneurial alertness to be influenced by personality traits, such as creativity and optimism, social networks, relevant prior knowledge and experience. The degree of specificity of industry and special interest knowledge about market needs and resources is also taken into account. Ardichvili et al.'s model highlights the point that for entrepreneurial activity to take place, an individual needs to take action. Given that the individual is central to the process of entrepreneurship and this thesis, the extant literature focussing on the role of the individual is discussed in more detail in Section 2.4.

The next section, Section 2.3, outlines the theoretical foundation of this thesis before discussing the literature on the entrepreneur as an individual; in particular, attention is given to the individual's cognitive processes in relation to the formation of entrepreneurial intent. The sections that follow, beginning with the parent literature, are organised according to the theoretical framework shown in Figure 2.1., (p. 22).

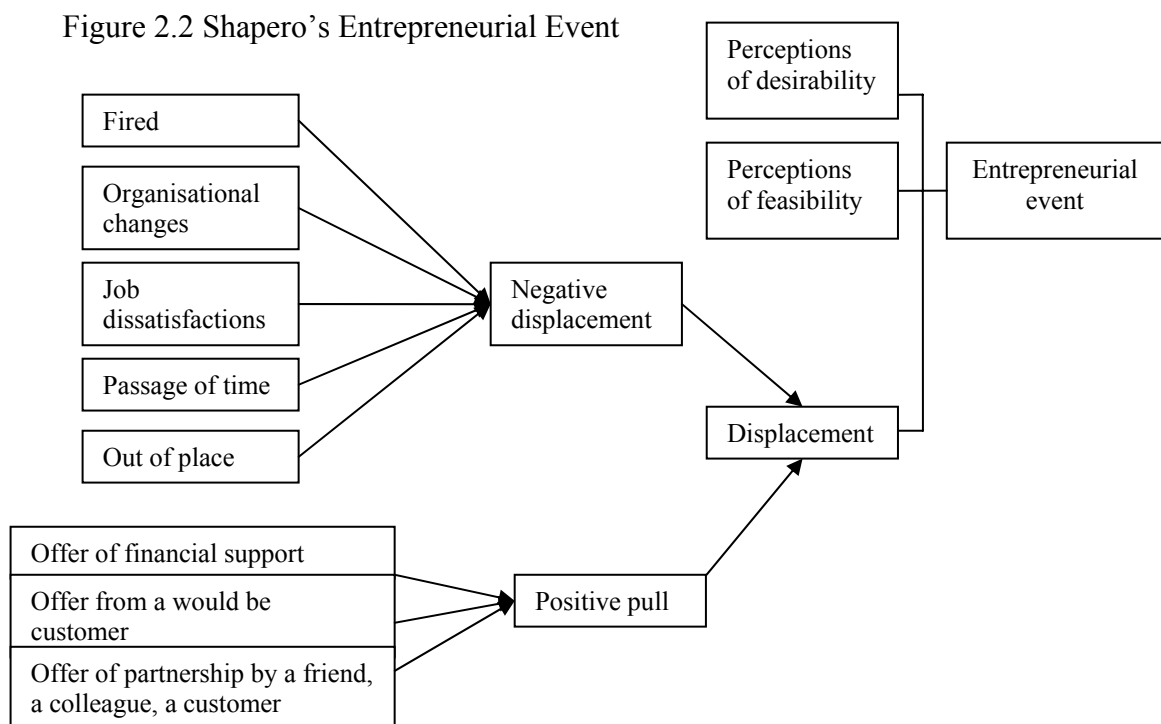
2.3 FOUNDATION THEORIES

Three cognition-based theories are used in this thesis to provide theoretical and empirical support for the proposed model. Across all three theories, an individual's perceptions, or cognitions, serve as the primary explanatory mechanism for the formation of intentions. The three theories, Shapero's Entrepreneurial Event (SEE) (Shapero and Sokol, 1982), The

Theory of Planned Behaviour (TPB) (Ajzen, 1991) and Social Cognitive Theory (SCT) (Bandura, 1986) are discussed in turn in this section.

2.3.1 SHAPERO'S ENTREPRENEURIAL EVENT THEORY

To consider how entrepreneurial intentions are evident in 'entrepreneurial event formation' Shapero and Sokol (1982) looked at life path changes and their impact on the individual's perceptions of desirability and perceptions of feasibility related to new venture formation (See Figure 2.2 below). This model assumes that critical life changes (displacement) precipitate a change in entrepreneurial intention and subsequent behaviour. Displacement can occur in a negative form (e.g. divorce, loss of a job) or a positive form (financial support, good business partner). The intention to become self-employed and form a new venture (an entrepreneurial event) therefore depends on the individual's perceptions of desirability and feasibility in relation to that activity.



2.3.1.1 DISPLACEMENT

In Shapero's model (figure 2.2) displacement is the catalyst for a change in behaviour and the individual then makes a decision to act based on perceptions of desirability and feasibility. This model suggests that human behaviour is in a state of inertia until an event creates displacement resulting in behaviour change (Nabi et al., 2006). Displacement comes in either a negative or positive form described by Gilad and Levine (1986) as the 'push' theory and the 'pull' theory. The negative displacement of, for example, losing a job pushes an individual into self-employment. On the other hand, the positive displacement of, for example, financial assistance pulls an individual into self-employment. Unfortunately, empirical studies of these specific push and pull factors are limited with results offering little predictive ability (Krueger et al., 2000) and logically, displacement may cause other behaviours than self-employment. An interesting question arising from the concept of 'push factors' is – Is there enough time for a trigger event to occur in the period in which a student takes a subject in entrepreneurship? Participation in a fourteen week entrepreneurship subject is tested as a 'trigger event' in the research in this thesis and is discussed further in Section 2.5 - Entrepreneurship Education.

2.3.1.2 PERCEPTIONS OF DESIRABILITY OF ENTREPRENEURSHIP

According to Shapero and Sokol (1982) the entrepreneurial event is a product of an individual's perceptions of desirability of entrepreneurship affected by their own personal attitudes, values and feelings, which are a result of their unique social environments (eg. family, peer groups, educational and professional influences). In other words, an individual

needs to first see the act of self-employment as desirable before it is likely self-employment intentions will be formed.

Furthermore, Bird (1988) considered desirability to be formed through ‘intuitive thinking’ in the intentions process, and feasibility, discussed next, as ‘rational thinking’. Perceived desirability of entrepreneurship is an affective attitudinal judgment (an emotive response) and entrepreneurs use such judgment to make decisions on whether or not to act (Mitchell et al., 2002). It follows that a goal of entrepreneurship education would be to develop in students, a positive attitude towards entrepreneurship. Perceived desirability of self-employment is one of the constructs used in the revised model in the research in this thesis and is discussed in Section 2.7.3.

2.3.1.3 PERCEPTIONS OF FEASIBILITY OF ENTREPRENEURSHIP

According to Shapero’s Entrepreneurial Event, (Shapero and Sokol, 1982), an individual’s perception of feasibility of entrepreneurship is related to an individual’s perception of available resources (eg. knowledge, financial support, and partners). Based on the Shapero-Krueger framework (Krueger et al., 2000), entrepreneurial self-efficacy is a suitable proxy for perceived feasibility (Segal et al., 2005). Furthermore, McMullen and Shepherd (2006) stated that belief in the ability to pursue entrepreneurial action (perceived feasibility) is a function of entrepreneurial knowledge.

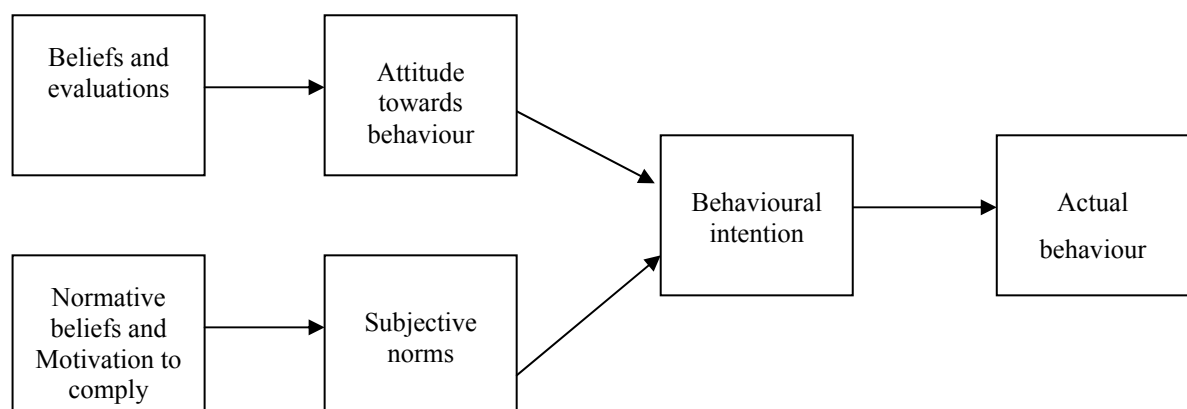
Shapero and Sokol (1982) p. 86, make the point that both perceptions and feasibility and

desirability necessarily interact. That is, if an individual sees the formation of a new business as unfeasible they may conclude it as undesirable and vice versa. It is therefore possible that students' attitude toward self-employment may be positively impacted by participation in entrepreneurship education; however, in the absence of perceptions of feasibility (belief in one's ability to self-employed, and or the ability to acquire necessary resources) self-employment intentions may not eventuate. Conversely, students' perceptions of feasibility may be positively impacted by participation in entrepreneurship education, but without a desirability to be self-employed, again, self-employment intentions may not be formed.

2.3.2 THE THEORY OF PLANNED BEHAVIOUR

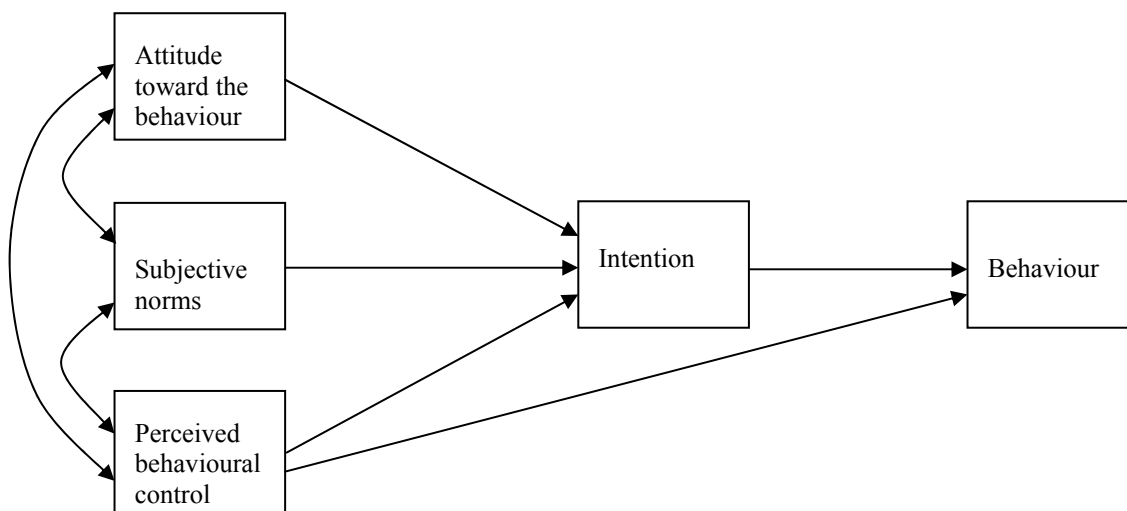
The Theory of Planned Behaviour (Ajzen, 1991), was derived from the Theory of Reasoned Action (Fishbein and Ajzen, 1975), see Figure 2.3, which states that behavioural intentions are formed by one's attitude toward that behaviour and one's subjective norms – (i.e. influence by significant others - e.g. parents, peers, role models). In turn, both attitudes and subjective norm are influenced by evaluations, beliefs, and motivation formed through one's unique individual environments.

Figure 2.3 (TRA) The Theory of Reasoned Action (Fishbein and Ajzen, 1975).



An extension to the Theory of Reasoned Action, the Theory of Planned Behaviour, see Figure 2.4, assumes that most human behaviour results from an individual's intent to perform that behaviour and their ability to make conscious choices and decisions in doing so (volitional control). The Theory of Planned Behaviour (Ajzen, 1991) presents intention dependent upon three factors: (1) the individual's attitude toward the behaviour (do I want to do it?), (2) subjective norm (do other people want me to do it?), and (3) perceived behavioural control (do I perceive I am able to do it and have the resources to do it?). The third factor is additional to the original model – the Theory of Reasoned Action. An individual's attitude toward a behaviour and subjective norm are considered motivational factors that influence behaviour. In contrast, the third factor, perceived behavioural control is assumed to capture non-motivational factors that influence behaviour. Combined, these three factors represent an individual's *actual* control over behaviour and are usually found to be accurate predictors of behavioural intentions; in turn intentions are able to account for a substantial proportion of variance in behaviour (Ajzen, 1991).

Figure 2.4 (TPB) The Theory of Planned Behaviour (Ajzen, 1991).



In the model in Figure 2.4, intention is shown as the immediate antecedent of behaviour, however in reality we know that not all intentions are ultimately carried out. In some cases an individual may not be able to follow through with the desired behaviour due to external factors, despite having the intention to do so. On the other hand, the attitude-intention link is internal and in general is less affected by dynamic external factors (Ajzen, 1991). The research in this thesis relates only to this internal link. To consider the intention-behaviour link, longitudinal research would be required and is beyond the scope of this project.

2.3.2.1 ATTITUDE TOWARD THE BEHAVIOUR

Attitude toward the behaviour refers to the degree to which an individual has a desirable or undesirable appraisal of the behaviour of concern. Kim and Hunter (1993) conducted meta-analyses of 93 independent behavioural intentions studies concluding by confirming strong empirical support for the attitude-intentions relationship. In their study, behaviours were divided into nineteen different topics; examples include intention to vote (Shepherd, 1987); intention to have a child (Davidson and Jaccard, 1979); intention to donate blood (Zuckerman and Reis, 1978); and intention to cheat or copy another's work (DeVries and Ajzen, 1971). As expected, the relationship between attitude and behavioural intention was stronger than that between behavioural intention and ultimate behaviour, due in part to the effect of external factors as noted by Ajzen (1991). As stated previously, this thesis is concerned with the antecedents to intentions not the intentions-behaviour relationship. The perceived desirability measure in Shapero's Entrepreneurial Event (SEE) (Shapero and Sokol, 1982), is similar to the dimension of attitude in Ajzen's (1991) Theory of Planned Behaviour (TPB).

2.3.2.2 SUBJECTIVE NORM

In addition to attitudes influencing behaviour through intentions, Ajzen (1991) refers to the perceived social pressure from one's peers and 'significant others' impacting one's intention to perform or not to perform a specific behaviour as 'subjective norm'. Krueger et al. (2000) included this measure in their entrepreneurial intentions model and subsequently did not find a relationship between an individual's subjective norm and intention to start a business, calling for more studies with more reliable measures in this research domain. Furthermore, it is reasonable to assume that this dimension of subjective norm may already be accounted for in one's perceived desirability of performing a specific behaviour and as such is not included in the revised model in this thesis.

2.3.2.3 PERCEIVED BEHAVIOURAL CONTROL

As outlined, the Theory of Planned Behaviour is an extension of the Theory of Reasoned Action, earlier work by Fishbein and Ajzen (1975). The extended version included the addition of perceived behavioural control to account for situations where non-motivational factors play a role in attitude turning into action (eg. lack of financial resources may alter perceived behavioural control turning into intention if the behaviour was, for example, to purchase a car). Other examples of inhibiting factors might be - lack of time, lack of knowledge and skills, and lack of co-operation from others.

Perceived behavioural control has also been referred to as feasibility, in particular in studies

measuring entrepreneurial intention (Krueger and Brazeal, 1994; Krueger et al., 2000; Peterman and Kennedy, 2003). Bandura's (1977, 1982) self-efficacy measure is too considered very similar to perceived behavioural control (Ajzen, 1991; Summers, 2000) as it reflects an individual's personal judgement of their ability to perform a prospective behaviour. Self-efficacy measures have been used instead of perceived behavioural control within the Theory of Planned Behaviour in several studies with positive results (Connor and Armitage, 1998). Self-efficacy and perceived entrepreneurial self-efficacy are discussed further in relation to Social Cognitive Theory (Bandura, 1986) in Section 2.3.3.

Furthermore, Ajzen (2001, p. 48) stated that perceived behavioural controllability, whilst similar, can be seen as distinct from perceived self-efficacy and that the latter may be a more important antecedent of intentions and actions. In 2002, Ajzen clarified the concept of behavioural control further and highlighted the importance of incorporating self-efficacy and controllability items into intention measures to improve behaviour prediction.

2.3.2.4 INTENTIONS

Intentions reflect an individual's willingness or plans to engage in a particular behaviour, and have several antecedents as discussed in the previous sections. The ultimate purpose of intentions research is the prediction of behaviour. Psychologists have been interested in the study of behavioural intentions for many years (Assagioli, 1973; James, 1950; Lewin, 1935) and over time cognitive psychologists (Fishbein and Ajzen, 1975; Rotter, 1966; Searle, 1983) have developed three divergent theories (Bird 1988); (1) linguistic theory, (2) attribution theory and (3) expectancy theory. The Theory of Planned Behaviour is based on the

expectancy theory model whereby individuals learn to favour behaviours where they expect favourable outcomes, and to form unfavourable attitudes towards behaviours associated with undesirable outcomes (Ajzen, 1991).

2.3.2.5 PREDICTIVE ABILITY OF THE THEORY OF PLANNED BEHAVIOUR MODEL

The predictive ability of intentions models is dependent upon three conditions being met (Ajzen, 1991). The first condition is that the intention measure and the perceived behavioural control measure must be compatible with the behaviour that is to be predicted. In the case of the research in this thesis the intended 'behaviour' is entrepreneurial action in the form of 'self-employment' and the perceived behaviour control measure is entrepreneurial self-efficacy. Because situational factors or intervening events can produce changes in an individual's intentions the second condition is: That in the time between the assessment of intentions (including perceived behavioural control) and the observation of the behaviour, conditions must remain stable. This second condition does not influence the research in this thesis as the dependent variable of interest is intention; the consequence - behaviour is not measured in the scope of this study. The third condition concerns the accuracy of perceived behavioural control. When the individual has complete control over behavioural performance, prediction of behaviour is plausible through the use of intentions alone; however, in other situations where intervening factors may have an impact, the measurement of perceived behavioural control or in the case of the revised model in this thesis – perceived entrepreneurial self-efficacy, provides additional explanation and strength to behavioural intention and consequent prediction.

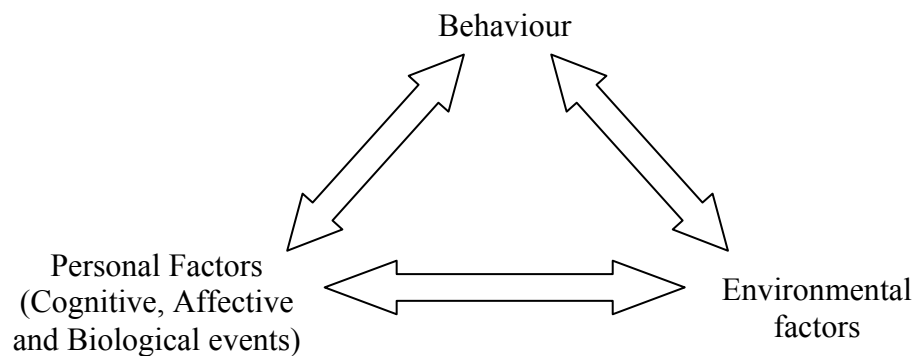
In summary, many researchers have used the Theory of Planned Behaviour for its predictive power and applicability across a variety of content domains including entrepreneurship. Whilst the intentions-behaviour link is not tested in this research, it is important that support exists for this relationship to defend the need for further research into the antecedents to intentions. Intentions are signals of an individual's commitment to carry out a specific behaviour and it has been proven that intentions precede behaviour (Ajzen and Fishbein, 1980). Meta-analyses research by Kim and Hunter (1993) using a path analysis methodology confirmed that the association between attitudes and behaviour can be fully explained by attitude-intention and intention-behaviour relationships (Krueger, 2000). Based on the understanding of the belief, attitude and intention relationship, individuals' beliefs and attitudes regarding self-employment would inform their intention to become self-employed. Additionally, Social Cognitive Theory includes the investigation of human behaviour and is discussed in the following section in relation to its applicability to the revised model in this thesis.

2.3.3 SOCIAL COGNITIVE THEORY

Social Cognitive Theory (SCT), originally referred to as Social Learning Theory (Bandura, 1977), identifies human behaviour as an interaction of - a) personal factors, b) behaviour, and c) the environment (Bandura 1986). The theory provides a framework (see Figure 2.5) for understanding, and predicting a variety of types of human behaviour. Social Cognitive Theory is useful for not only understanding behaviour, but also identifying methods in which behaviour might be modified or changed (Pajares, 1997).

Furthermore, Social Cognitive Theory is the study of how learning occurs through changes in mental state (Ormrod, 1999). The theory provides guidelines that can assist instructors in the design of programs to help individuals achieve change through their own motivation by providing them with specific knowledge, skills and resources (Anderson, 2000).

Figure 2.5 Social Cognitive Theory (Bandura, 1986)



In the model, the interaction between the person and the environment entails one's beliefs and cognitive competencies that are developed and influenced by their environment, both social and physical. Social environment refers to family members, friends and role models; the physical environment refers to the individual's surroundings and access to resources (Pajares, 1997). The combination of environment and behaviour, involves an individual's behaviour based on the impact of their environment, and at the same time their behaviour can also be modified by that environment. This does not necessarily mean that all individuals will follow the same pattern of behaviour given the same environment, as individuals will construe the same set of stimuli in different ways due to unique cognitive competencies and beliefs (Jones, 1989).

The interaction between the individual and a specific behaviour necessitates the influence of one's thoughts and one's actions. The three factors a) behaviour, b) environment, and c) person are constantly influencing each other. Neither one is necessarily the result of the other as intervening factors may exist (Glanz et al, 2002). One such intervening cognitive factor is a person's self-efficacy. Bandura (1977) noted that self-referent thought intervenes between knowledge and behaviour and that individuals may convince themselves, despite having the necessary knowledge, that they lack the ability to perform a specific task or behaviour. This cognitive mechanism is referred to by Bandura (1977) as self-efficacy and is important in this thesis and is discussed in the following section in more detail.

2.3.3.1 SELF-EFFICACY

General self-efficacy is an individual's faith in his or her capacity to perform successfully across a variety of diverse situations (Gardner and Pierce, 1998). Research into attitudes has found that one's perceptions of one's ability to perform specific tasks increase the likelihood of attitude converting into intent and consequent behaviour (Ajzen, 1991). In the absence of self-efficacy, individuals make self-limiting decisions despite having the necessary skills to pursue a path of action (Bandura, 1986).

Several authors (Scherer et al., 1982; Stanley and Murphy, 1997; Tipton and Worthington, 1984) have found general self-efficacy to be no different than self-esteem and suggest using a specific form of self-efficacy where appropriate. The difference between general self-efficacy and task self-efficacy is the scope of the actions that are considered. Whilst the contributory factors for both general self-efficacy and task-specific self-efficacy are the same

(i.e., actual experience, vicarious experience, verbal persuasion, and psychological states) task-specific self-efficacy is considered a more reliable measure of efficacy beliefs in specific task behaviours (Bandura, 1997; Locke and Latham, 1990). For example, computer self-efficacy refers to ones' judgment of their capabilities to use computers in diverse situations (Marakas et al. 1998).

Boyd and Vozikis (1994) stated that self-efficacy is a valuable addition to entrepreneurial intentions models seeking to explain more about the development of entrepreneurial intentions. It follows that entrepreneurial behaviour would be considered specific task behaviour and that studies would be more reliable utilising the task-specific construct entrepreneurial self-efficacy (ESE). Perceived entrepreneurial self-efficacy is one of the constructs tested in this thesis and is concerned with one's belief in one's ability to be entrepreneurial in the form of self-employment; this construct is discussed in the following section in terms of its relationship with students' self-employment intentions

2.3.3.2 PERCEIVED ENTREPRENEURIAL SELF-EFFICACY

As stated earlier, Boyd and Vozikis (1994) revised Bird's (1988) entrepreneurial intentions theoretical model and included self-efficacy as a critical antecedent to entrepreneurial intentions and behaviour. Chen et al. (1998) and Zhao et al. (2005) found a positive relationship between entrepreneurial self-efficacy and intentions to start a business. In their studies entrepreneurial self-efficacy was defined as confidence in one's ability to successfully perform entrepreneurial roles and tasks. In Chen et al.'s (1998) study individuals with high entrepreneurial self-efficacy are more likely to be entrepreneurs than those with

low entrepreneurial self-efficacy. Given that we know that an individual's self efficacy can be influenced (Bandura, 1986), it is reasonable to suggest that the pedagogical practices experienced by students in a fourteen week entrepreneurship course may positively impact their levels of entrepreneurial self-efficacy. It follows that previous entrepreneurial experience may also lead to increased levels of entrepreneurial self-efficacy given the opportunities provided for role-modelling and learning through doing (enactive mastery), (Bandura, 1986).

Several studies have found that task-specific training positively impacts an individual's task-specific self-efficacy (Gist and Mitchell, 1992) and correspondingly Bandura's (1980) Social Cognitive Theory has established that self-efficacy plays an important role in career-related decision making. The task-specific construct – entrepreneurial self-efficacy is useful in measuring an individual's perceptions relating specifically to entrepreneurial behaviour. The contributing factors of general self-efficacy and entrepreneurial self-efficacy are the same (i.e. actual experience, vicarious experience, verbal persuasion, and psychological states – Bandura, 1997), and it is the summation of life experiences including specific training and work experience that may lead to the enhancement of entrepreneurial self-efficacy.

In summary, these assumptions are developed in this thesis, providing important information regarding the impact of previous entrepreneurial experience and entrepreneurship education on students' intentions to be self-employed. Before specific hypotheses are presented, the boundaries in this thesis are briefly reviewed to make explicit the delimited problem area.

2.4 THE ENTREPRENEUR AS AN INDIVIDUAL

As stated in Chapter One of this thesis, researchers' frustration over the inability to produce one psychological profile for the entrepreneur caused a shift in entrepreneurship research. Subsequently, there was a decade of limited research about the individual entrepreneur and in 1992 Kelly Shaver and Shane Scott called for a special issue in 'Entrepreneurship Theory and Practice' in an attempt to refocus on the individual and the social and psychological processes related to the activity of entrepreneurship (Gartner et al., 1994). Their call was successful and the re-emergence of this stream of research has highlighted the importance of this area of research and has increased the variety of theoretical and empirical research on the entrepreneur as an individual.

The decision to become an entrepreneur is the catalyst for entrepreneurship and the entrepreneurial process. The focus of this thesis is the entrepreneur as an individual and the factors that influence his or her self-employment intention. Past research about the individual entrepreneur can be divided into three distinct streams 1) trait orientation, 2) behavioural perspectives, and 3) the cognitive processes. Trait orientation and behavioural perspectives are reviewed briefly in Sections 2.4.1 and 2.4.2, and the cognitive processes relating to the formation of self-employment intentions are discussed in Sections 2.4.3.

2.4.1 TRAIT ORIENTATION

The trait approach to entrepreneurship has been pursued by many researchers in an attempt to separate entrepreneurs from non-entrepreneurs and to identify a list of character traits specific to the entrepreneur. There is no agreement however on the number of

traits, specific to the entrepreneur, or their validity. Chell (2000) suggests that it is not clear whether some of the studied attributes precede entrepreneurial behaviour or whether entrepreneurs acquire them in the process. Furthermore, entrepreneurs may possess some, but not necessarily all, of the traits highlighted in the literature bringing us to the conclusion that not one stereotypical personality model fits. That said Table 2.2 presents seven of the most popular entrepreneurial traits studied in the entrepreneurship literature followed by a summary of their contribution.

Table 2.2

Psychological trait	Authors
Need for achievement	Begley and Boyd, 1987; Henry et al., 2003; McClelland, 1961.
Need for power	Hatch and Zweig, 2000; McClelland, 1961.
Need for affiliation	McClelland, 1961; Wainer and Rubin, 1969.
Internal locus of control	Begley and Boyd, 1987; Bird, 1988; Brockhaus, 1975; Chen et al., 1998; Cromie, 2000; Cromie and Johns, 1982; Sexton and Bowman, 1985; O’Gorman and Cunningham, 1997; Rotter, 1966.
Desire for autonomy	Davidsson, 1995; Kets de Vries, 1996; Kirby, 2003 ; Lawrence and Hamilton, 1997; van Gelderen and Jansen, 2006.

Tolerance of ambiguity Uncertainty	Busenitz, 1996; Douglas and Shepherd, 2000; Gaglio and Katz, 2001; Hornaday and Bunker, 1970; Kirzner, 1979; Knight, 1921; MacDonald, 1970; McMullen and Shepherd, 2006; Mitton, 1989; Schumpeter, 1934; Sexton and Bowman, 1985.
Risk-taking propensity	Begley and Boyd, 1987; Brice, 2002; Brockhaus, 1980; Drucker, 1985; Kets de Vries, 1996 ; Palich and Bagby, 1995; Shaver and Scott, 1992; Simon et al., 2000 ; Stewart and Roth, 2001.

2.4.1.1 MCCLELLAND'S CONTRIBUTION

McClelland (1961) developed further Max Weber's work (1904/1970) on society and economic development stating that a nation's and correspondingly an individual's 'need for achievement' (nAch) was fundamental to economic development. Need for achievement in relation to entrepreneurs refers to their need to achieve as a motivational factor. Anecdotal evidence suggests entrepreneurs see profits as a measure of success and not just as a goal. It is the prospect of achievement (not money) that drives them. In his study McClelland discovered that entrepreneurs rated high on (nAch) and were very competitive when their results were measurable. Individuals demonstrating a high need for achievement are focussed, committed, and have a real desire to do well in all they do in life. McClelland (1965) presents a strong argument in support of the view that achievement motivation can be taught (Henry et al., 2003). This is important and relevant for entrepreneurship educators to understand in the development of entrepreneurship pedagogy.

Individuals with a need for affiliation like to feel part of a group and need to develop and foster a wide range of social and personal relations (Wainer and Rubin, 1969). Approval of their peers is very important to them. Need for affiliation (nAff) was also identified by McClelland (1961) to be a relevant entrepreneurial characteristic, however in later work by McClelland (1965), he points out that approval-seeking behaviour is at odds with other characteristics related to entrepreneurs, eg. propensity for risk-taking and need for power (nPow). A high need for power (nPow) score indicates a strong desire for control and dominance; it stands to reason therefore that entrepreneurs possessing this trait would enjoy the status associated with business ownership (Henry et al., 2003). In contrast, Hatch and Zweig (2000) predominantly considered a high need for power (nPow) as the need to be in control, to influence group decisions and to lead, linking it more closely to motivation. Notwithstanding the significant contribution made by McClelland to the psychological traits in entrepreneurship research, as with other entrepreneurial characteristics, consistent causal associations are yet to be proven (Brockhaus, 1982).

2.4.1.2 INTERNAL LOCUS OF CONTROL

Individuals possessing an internal locus of control believe they are in control of future events and outcomes as a result of their own actions (Cromie, 2000). Locus of control theory was developed by Rotter (1966) and since then several researchers have investigated entrepreneurs in relation to this trait (Shapero, 1975; Chell et al., 1991; Cromie and Johns, 1982). Entrepreneurs have been found to have the tendency to attribute outcomes to their own personal action, choosing their own destiny, not submitting to the pressure of social norms (Bird 1988). In contrast, evidence from other researchers (Begley and Boyd, 1987;

Brockhaus, 1975; O’Gorman and Cunningham, 1997; Sexton and Bowman, 1985) has not been positive on this trait and it can be concluded that whilst entrepreneurs possessing an internal locus of control might be distinguishable from the general population, entrepreneurs do not consistently show a higher internal locus of control than managers. Chen et al. (1998) found entrepreneurial self-efficacy (discussed in Section 2.3.3.2) to better distinguish entrepreneurs from managers than the measure locus of control.

2.4.1.3 DESIRE FOR AUTONOMY

Due to entrepreneurs’ internal locus of control as described above, they have been found to have a higher need for independence and autonomy in fear of external control from others (Kirby, 2003). They dislike rules and tend to work out how to get around them, and as a consequence have even been considered deviants who desire to be independent of everyone and in total control (Kets de Vries, 1977). The need for autonomy has been stated by entrepreneurs as one of the most frequent explanations for new venture creation and has been supported in studies by several authors (Davidsson, 1995; Lawrence and Hamilton, 1997; van Gelderen and Jansen, 2006). The samples in the studies by these authors have included individuals already in an employed position who may be more likely to seek autonomy as a motivation for self-employment than tertiary students completing study and seeking a career.

2.4.1.4 TOLERANCE OF AMBIGUITY AND UNCERTAINTY

This personality trait affects an individual’s response to uncertainty (MacDonald, 1970). When viewed as a continuum, an individual’s response to uncertainty can range from terrifying for those with low tolerance, to positively stimulating for those with a high

tolerance for ambiguity. McMullen and Shepherd (2006) posit that uncertainty, as a stream of research in the entrepreneurship literature, has taken two paths. One path is the level of uncertainty about an unknown future for those deciding to act or not (Busenitz, 1996; Gaglio and Katz, 2001; Kirzner, 1979). The second and most popular path is the view of an individual's willingness to bear uncertainty as an attitude toward risk-taking (Douglas and Shepherd, 2000; Knight, 1921; Schumpeter, 1934). Either way, an individual requires knowledge (to evaluate the level of uncertainty) and motivation (as a willingness to bear uncertainty). McMullen and Shepherd (2006) argue that a willingness to bear the perceived uncertainty associated with entrepreneurship can be seen as a belief-desire configuration similar to that of entrepreneurial intentions models. That is, desire of pursuing entrepreneurial action is a function of motivation, and belief in the ability to pursue entrepreneurial action is a function of knowledge. Mitton (1989) suggested that entrepreneurs seek the excitement of ambiguous situations in order to challenge themselves. This tolerance for ambiguity tends to go hand in hand with entrepreneurs' risk taking propensity.

2.4.1.5 RISK TAKING PROPENSITY

An individual's risk-taking propensity can be defined as their inclination to accept risk comfortably (Brice, 2002) and is related to achievement motivation discussed earlier. Stewart and Roth (2001) looked at the risk propensity differences between entrepreneurs and managers in a meta-analysis of twelve studies of entrepreneurial risk-taking propensity. Five of the studies showed no significant differences, with the remaining seven supporting the notion that entrepreneurs are moderate risk-takers. Across the twelve studies, five different risk-propensity measures were used, and one of the reasons attributed to the lack of

consensus in the research results is methodological issues (Shaver and Scott, 1991). Simon et al. (2000) suggest that factors affecting an individuals' perceived risk assessments include cognitive biases such as, overconfidence and the illusion of control. In their study, heuristics were stated to play a role in risk evaluation and it follows that an individual's previous entrepreneurial experience would be an important factor in this process.

In summary, the trait approach to entrepreneurship has made an important contribution even though generally speaking, weak direct relationships have been found between the traits of entrepreneurs and non-entrepreneurs in the past research (Brockhaus, 1982; Begley and Boyd, 1987; Low and MacMillan, 1988). Researchers accept that a reliable personality profile of the typical entrepreneur does not exist (Chell, 2000) and given the suggestion that it is not clear whether some of the studied attributes precede entrepreneurial behaviour or whether entrepreneurs acquire them in the process, stable personality characteristics have not been a focus in this research.

Gartner's seminal piece in 1988 titled "Who is an entrepreneur is the wrong question" signalled the beginning of the shift away from the personality traits research in the field, discussed in this section. Baum, Locke and Smith (2001) developed a multidimensional model of venture growth and concluded that traits were important predictors of venture growth, however not in isolation, but through mediating factors such as motivation and strategy. Thus, the psychological approach in entrepreneurship research has moved away from the investigation of personality traits alone, to the exploration of behaviour, motivation and cognition (Shaver and Scott, 1991). Research relevant to the individual entrepreneur is now more complex and includes situational and perceptual variables and is the

favoured approach in this thesis. The behavioural approach to entrepreneurship research is briefly discussed in the next section before the cognitive processes (Section 2.4.3) which is the focus of this research.

2.4.2 BEHAVIOURAL PERSPECTIVES

The entrepreneur has been held in high esteem as an individual with the ability to recognise, exploit and act on profit opportunities not seen by others. This is a behaviour that intrigues researchers seeking to understand more about new venture creation (Bygrave and Minniti, 2000). Research into behaviour in general can be traced back to the early eighteenth century and gained popularity in the early twentieth century with work by Watson (1930), Thorndike (1932), and Skinner (1953). Watson coined the term ‘behaviourism’ based on observable and measurable behaviours including the stimulus-response pattern of conditioned behaviour, void of the inclusion of conscious thought. Limitations were found with this approach and there was a marked shift from the behaviourist to the cognitive perspective (Good and Brophy, 1990) which included unobservable behaviours and concepts related to perceptions and motives. The understanding of entrepreneurs’ motivations and goals is limited (Kenworthy-U’Ren, 2001) and empirical research has not found “one” type of motivation that drives entrepreneurs. That said, understanding the antecedents to individuals’ decisions to behave entrepreneurially is an area warranting further investigation based on cognitive measures.

Whilst the trait approach to understanding entrepreneurship deliberated about *who is an entrepreneur*, the cognitive approach considers the antecedents to entrepreneurial behaviour,

and the behavioural approaches consider *what it is that entrepreneurs do*. The focus of the behavioural approach in entrepreneurship is to understand the entrepreneur's role in the complex process of new venture creation and Gartner (1989) asserted that researchers need to observe entrepreneurs in the new venture formation process and describe specifically the roles and activities undertaken.

Behavioural studies in this area have focussed on successful versus unsuccessful entrepreneurs (Brockhaus, 1980); entrepreneurs versus managers (Cromie and Johns, 1983); entrepreneurs versus small business owners (Carland et al., 1984) and samples are predominantly made up of individuals already immersed in the entrepreneurial process. The research in this thesis focuses on the antecedents to entrepreneurial intention formed prior to actual entrepreneurial behaviour which are explained best by the cognitive approach discussed next.

2.4.3 COGNITIVE PROCESSES

Cognitive measures are based on unobservable behaviour and are useful measures in understanding more about the human mind (Good and Brophy, 1990). Researchers are confident that cognitive models provide stronger predictive power than the trait approach in entrepreneurship research (Gartner, 1985; Katz and Gartner, 1988). Research into the cognitive processes of entrepreneurs attempts to understand more about the how entrepreneurs think (Mitchell et al., 2007) and considers the ways entrepreneurs process information (Baron, 2004). One of the questions driving this approach is - Why do some individuals become entrepreneurs while others equally or more talented do not? The

underlying assumption is that entrepreneurs think and behave in a distinctive manner different to non-entrepreneurs (Kirzner, 1979; McClelland, 1976; Schumpeter, 1934). Entrepreneurs seek and recognise opportunities and then evaluate the risk versus the reward of new venture creation.

The manner in which individuals' cognitively process information is related to their ability to identify and exploit opportunities (Corbett, 2007). Mitchell et al. (2002) defined the key elements of entrepreneurial cognitions to be knowledge structures (based on heuristics or expert scripts), and decision-making (based on assessment or judgment) set in an entrepreneurial context. In this process entrepreneurs not only use affective judgment (their emotive responses and feelings), they also use cognitive reasoning (their beliefs, thoughts and perceptual skills) to make decisions on whether or not to act. In this same vein, Robinson et al. (1991) directed their research towards the attitudes of entrepreneurs, furthering work by Allport (1935) and proposed that attitudes and the combination of affective and cognitive factors lead to conative behavioural intentions. An intentions-behavioural model is central to the research in this thesis and the foundational cognitive theories of Shapero (1982), Bandura (1986), and Ajzen (1991) were previously elaborated in Section 2.3. A review of the entrepreneurial intentions literature is discussed next.

2.4.3.1 ENTREPRENEURIAL INTENTIONS

Entrepreneurial intent refers to the intent to perform entrepreneurial behaviour. Entrepreneurial intention has been defined as the intention to start a new business (Krueger and Brazeal, 1994; Zhao et al., 2005), the intention to own a business (Crant,

1996), or the intention to be self-employed (Douglas and Shepherd, 2002; Kolvereid, 1996). For the purpose of the research in this thesis, entrepreneurial intention is defined as an individual's intention to be self-employed.

Several researchers have successfully utilised intentions models to examine entrepreneurial intentions and its antecedents (Bird, 1988; Boyd and Vozikis, 1994; Chen et al., 1998; Crant, 1996; Douglas and Shepherd, 2002; Katz and Gartner, 1988; Kolvereid, 1992; Kolvereid et al., 2006; Krueger and Brazeal, 1994; Krueger and Carsrud, 1993; Krueger, Reilly and Carsrud, 2000; Peterman and Kennedy, 2003; Shapero and Sokol, 1982; Zhao et al., 2005). These studies are listed alphabetically by author in Table 2.3 below highlighting their focus and contribution.

Table 2.3

Author(s)	Focus	Level/Contribution
Bird (1988)	Entrepreneurial intention	Individual (theoretical)
Boyd and Vozikis (1994)	Entrepreneurial intention	Individual (theoretical)
Chen et al. (1998)	Intention to start a business	Individual (empirical)
Crant (1996)	Intention to own a business	Individual (empirical)
Douglas and Shepherd (2002)	Self-employment intention	Individual (empirical)
Katz and Gartner (1988)	Entrepreneurial intention	Organisational (theoretical)

Kolvereid (1996)	Self-employment intention	Individual (empirical)
Kolvereid et al. (2006)	Self-employment intention	Individual (empirical)
Krueger and Carsrud (1993)	Entrepreneurial intention	Organisational (theoretical)
Krueger and Brazeal (1994)	Entrepreneurial intention	Individual (theoretical)
Krueger et al. (2000)	Entrepreneurial intention Comparing and testing intentions models	Individual (empirical)
Peterman and Kennedy (2003)	Entrepreneurial intention	Individual (empirical)
Shapiro and Sokol (1982)	Entrepreneurial event formation	Individual or Group (theoretical)
Zhao et al. (2005)	Intentions to start a business	Individual (empirical)

Work by Katz and Gartner (1988) and Krueger and Carsrud (1993) looked at organisation-level entrepreneurial intentions in relation to organizational emergence and considered the influence of institutional factors to better understand their impact. Moving to individual-level entrepreneurial intention, Bird (1988) linked the new venture's context with the entrepreneur's intentions and subsequent action. Her model of intentional action included the entrepreneur's thinking style (rational and intuitive) impacted by the entrepreneur's personal history, personality and abilities, and the state of the environment.

Furthering this theoretical work by Bird (1988), Boyd and Vozikis (1994) included the

concept of entrepreneurial self-efficacy into their intentions models to better explain antecedents to entrepreneurial intentions. Empirical studies by Chen et al. (1998) and Zhao et al. (2005) continued with the inclusion of entrepreneurial self-efficacy in their intentions models and found a significant relationship between entrepreneurial self-efficacy and entrepreneurial intention. Zhao et al. (2005) also found empirical support for the positive impact of formal academic course participation on intentions to start a new business. In addition, they recommended future researchers employ a quasi-experimental design to evaluate such effectiveness and the research in this thesis takes this recommendation into account.

In 1992 Bird looked at temporal issues related to intention and action to improve the accuracy of ‘prediction to act’. Katz (1990) stated that past research using statements of intent void of a time-frame failed to show a significant relationship to venture start-up activity. In contrast, using longitudinal data, a recent study by Kolvereid et al. (2006) revealed that intentions to become self-employed did actually determine later entry into self-employment providing strong support for the use of intentions models as predictors of entrepreneurial behaviour. Their research tested 297 business founders in relation to their self-employment intentions. Results indicated that prominent self-employment beliefs determine attitudes toward self-employment and that attitude and subjective norm determine self-employment intentions. Kolvereid’s research was based on Ajzen’s (1991) Theory of Planned Behaviour discussed previously in Section 2.3.2.

Using an economic model of the decision to be an entrepreneur, Douglas and Shepherd (2002), furthered work by Eisenhauer (1995), and developed an economic

model based on an individual's utility gained through self-employment. Using a sample of 300 alumni from an Australian business school they found that individuals consider risk, independence, and income when evaluating alternative career options, however do not consider the level of physical and mental effort required in the workplace. Shapero's Entrepreneurial Event (SEE) Formation model (Shapero and Sokol, 1982) and the Theory of Planned Behaviour (Ajzen, 1991) are combined in the model used in this thesis and both were previously discussed in Section 2.3.1. Krueger and Brazeal (1994) developed a theoretical model using the (SEE) model as a foundation, seeking to find more about the factors influencing entrepreneurial intentions. They suggest entrepreneurial potential as an antecedent to intentions with a precipitating event (displacement) required as the 'push' or 'pull' factor causing entrepreneurial intent (Shapero, 1982). This concept of displacement was discussed in Section 2.3.1.1. Using the Theory of Planned Behaviour (Ajzen, 1991), Kolvereid (1996) found that attitude toward self-employment, favourable social norms, and entrepreneurial self-efficacy positively influenced the intention to be self-employed. Entrepreneurial intentions models, derived from the Shapero's Entrepreneurial Event Formation model (Shapero and Sokol, 1982) and the Theory of Planned Behaviour (Ajzen, 1991), offer a means to explain and predict entrepreneurial behaviour. Krueger, Reilly and Carsrud, (2000) combined Shapero's model (1982) and The Theory of Planned Behaviour (Ajzen, 1991) to compare and test the models finding support for both. Using a sample of senior university business students they concluded that intentions-based models offer a valuable tool for further exploring the antecedents to entrepreneurial intentions.

Crant (1996), using Ajzen's (1991) intentions model, tested a sample of 181 students from the United States of America, and entrepreneurial intentions were found to be significantly

associated with individual's possessing high proactive personality scores and with those individuals with an entrepreneurial parent. In the same study males scored more highly than females in entrepreneurial self-efficacy and consequently entrepreneurial intention.

Peterman and Kennedy (2003), using Shapero's Entrepreneurial Event model, (Shapero and Sokol, 1982), examined the effect of participation in an enterprise education program on intentions to start a business using a sample of secondary school students. Positive changes in student's perceptions of the desirability and feasibility of starting a business were evidenced. Individual's degree of change in perceptions was related to the positiveness of their prior experience and to the positiveness of their experience in the enterprise education program.

It has been stated that past research on entrepreneurial intent has suffered from both methodological and theoretical limitations (Shook et al., 2003) and that future work should attempt to integrate and reduce the number of alternative intention models. The research in this thesis addresses this issue by integrating and consolidating the theories of intention following on from work by Krueger et al. (2000). The foundation theories discussed in Section 2.3 and the entrepreneurial intentions models used in the literature reviewed above offer the support and measures for the revised intentions model used in the research in this thesis. The cognitive processes - perceived desirability of self-employment and perceived entrepreneurial self-efficacy are important antecedents to an individual's self-employment intention and are discussed further in Sections 2.7.3 and 2.7.4.

2.4.3.2 SELF-EMPLOYMENT INTENTIONS

Phenomena such as on-line internet business and globalisation have created a plethora of new opportunities for the self-employed (Spoonley et al., 2004) and we have a generation of young adults who possess an unprecedented amount of technological know-how (Olson, 2007). Individual's career patterns no longer follow traditional work norms (Lewis, 2005) and as a result, experience gained through age is not necessarily a predictor of success. It follows that youth is not a barrier to entry to self-employment and that the tertiary students of the twenty-first century may consider self-employment as a viable career option following graduation.

As previously stated, the term entrepreneurial intentions has been referred to as the intention to own a business (Crant, 1996), the intention to start a business (Krueger and Brazeal, 1994), and the intention to be self-employed (Kolvereid et al., 2006). Self-employment intentions can be viewed as the first step in the process of new organisation emergence (Lee and Wong, 2004). Previous empirical research supports the view that early vocational aspirations are generally good predictors of later occupational choices (Schoon, 2001; Schmitt-Rodermund, 2004) and it is plausible that tertiary students with an interest in entrepreneurship will be likely to seek self-employment. The research in this thesis focuses on undergraduate students' intentions to be self-employed.

Much research has been devoted to the investigation of why some individuals choose self-employment over salaried-employment (Bygrave, 1989; Sexton and Bowman, 1985). Most approaches distinguish between stable personality variables and external environmental

influences (Krueger et al., 2000; Zhao et al., 2006) as exogenous factors positively influencing entrepreneurial intentions. Two exogenous factors, of interest in the research in this thesis, as antecedents to student's self-employment intentions, include previous entrepreneurial experience and participation in an entrepreneurship program.

In summary, Section 2.4 reviewed the literature of the entrepreneur as an individual, considering three different research approaches that take into account the entrepreneur's personality traits, behaviour and cognitions. This review suggests that the entrepreneur has been studied in several different ways in varying approaches and yet arriving at one definition of the entrepreneur has been a seemingly impossible task. Carson et al. (1995) advocate the integrated approach to the study of entrepreneurs to overcome this dilemma, proposing the inclusion of cognitions and environmental elements in empirical research studies. This approach parallels that of the entrepreneurial intentions models used more recently in studies of the individual entrepreneur (Krueger and Brazeal, 1994; Krueger et al., 2000; Peterman and Kennedy, 2003; Zhao et al., 2005) and is the basis of the research in this thesis. The impact of entrepreneurship education on entrepreneurial intentions is a research area gaining attention due to the increasing availability of entrepreneurship programs worldwide (Katz, 2003). The next section reviews the entrepreneurship education literature.

2.5 ENTREPRENEURSHIP EDUCATION

The increased interest in entrepreneurship and in the number of institutions offering entrepreneurship education can be attributed to the acknowledgment by external stakeholders of the importance of the creation of new businesses and innovation for wealth creation and

economic growth globally (Minniti, Bygrave and Autio, 2006). Studies about entrepreneurship education focus on enterprise education and consider course content, pedagogy, entrepreneurial learning, and assessment (Greene and Rice, 2007). The need to evaluate the effectiveness of entrepreneurship programs has been made evident by several researchers (Block and Strumpf, 1992; Porter and McKibben, 1988). Garavan and O’Cinneide (1994) present an analysis of six European entrepreneurship programs concluding with a call for increased evaluation of the effectiveness of programs worldwide.

A wide range of entrepreneurship training programs are offered worldwide and given the heterogeneity of such programs, measurement and comparison of their effectiveness is problematic (Fayolle and Klandt, 2006). Bechard and Toulouse (1998) suggest the goal of entrepreneurship education training programs should be specific to the target clientele and in turn evaluation should be adjusted accordingly. Students’ attitudes toward entrepreneurship can be changed over time (Hatten and Ruhland, 1995), and a useful approach to the measurement of entrepreneurship programs, as used in the research in this thesis, is to evaluate participants’ changes in attitudes and perceptions of entrepreneurship and the impact of these on their entrepreneurial intentions.

Typical assessment of any educational program is the evaluation of acquired knowledge and the measurement of participants’ understanding of the program content. Drucker (1985) asserted that entrepreneurship is a behavioural pattern, not a personality trait; and it is reasonable to assume that an individual can learn how to behave entrepreneurially. Drucker’s theoretical foundation, like that of Schumpeter and the Austrian School of Economics, ascribed to the concept of “the entrepreneur” and “dynamic disequilibrium”

suggesting both to be necessary elements in evaluating the role of people, society and industry in the free market (Kiessling and Richey, 2004). According to Drucker (1985), entrepreneurship is a 'teachable discipline' however there has been much debate about whether individuals can be taught to be entrepreneurs. In summary, the majority of the literature in this area suggests that certain elements of entrepreneurship are teachable (Gibb, 1998; Kanter, 1989; Sexton and Upton, 1987).

Given this is true, and in keeping with the increased attention toward the importance of entrepreneurship to global economic growth, the availability of entrepreneurship education has increased. Over the past three decades the number of institutions offering courses related to entrepreneurship has grown significantly (Katz, 2003). The younger generation of the 21st century is becoming the most entrepreneurial generation since the Industrial Revolution (Kuratko, 2005, p.578). Statistics show that approximately 5.6million Americans under the age of 34 are seeking self-employment. One third of these new entrepreneurs is under 30 years of age, and more than sixty percent of 18 to 29 year olds have stated that they want to own their own businesses one day (Tulgan, 1999). These figures confirm there is an expansion in the awareness of entrepreneurship and the number of individuals pursuing entrepreneurial careers at an earlier age than ever before. With this growth comes the challenge of providing useful and effective entrepreneurship education.

Further to producing a ten-year survey of the entrepreneurship education literature (1985-1994), Gorman et al. (1997) called for more empirical studies utilising sound methodologies to test the impact of such programs. In addition they recommended entrepreneurship education as a tool for increasing self-efficacy and as a preparation for self-

employment calling for more studies to assess the impact of entrepreneurship programs. To adequately prepare students to compete in the business world, Buckley et al. (1989) highlighted the need for instructors to have previous real-world experience to expose students to more than just theories and to fill the gap between what is taught and what is required for students to achieve business success. Furthermore, Buckley et al. (1992) advised the need to overcome a lack of managerial experience in the business school classroom suggesting, amongst other ideas, that management practitioners share their personal business experiences with students.

An individual's level of entrepreneurial expertise may be attained through real-world experiences prior to entering tertiary education and through participation in entrepreneurship education. Novices with an absence of previous entrepreneurial expertise may benefit from an experiential pedagogy where they are connected with and learning from more experienced entrepreneurs (Matlay, 2006). The entrepreneurship education intervention in this study was taught by a serial entrepreneur and tutors in the subject had also engaged in prior entrepreneurial endeavours. In addition, entrepreneurial guest speakers held discussion panels with the students about their experiences answering questions and offering advice.

We know that key attitudes and intentions toward behaviour are driven by perception and as such can be influenced (Ajzen, 1991). That said, entrepreneurship education is a tool that is available to increase individual's key attitudes, perceptions and intentions towards self-employment (Kolvereid, 1996a). Little empirical evidence supporting the theoretical claims of the benefits of entrepreneurship education exists (Krueger and Brazeal, 1994; Souitaris et al., 2007). An exception is the study by Peterman and Kennedy (2003) who

surveyed high school students and found that exposure to an enterprise program positively affected their entrepreneurial intention. There is a lack of empirical studies testing the relationship between participation in entrepreneurship education and self-employment intentions using an appropriate sample of students who are likely to be soon making career related decisions. The research in this thesis explores this gap in the research.

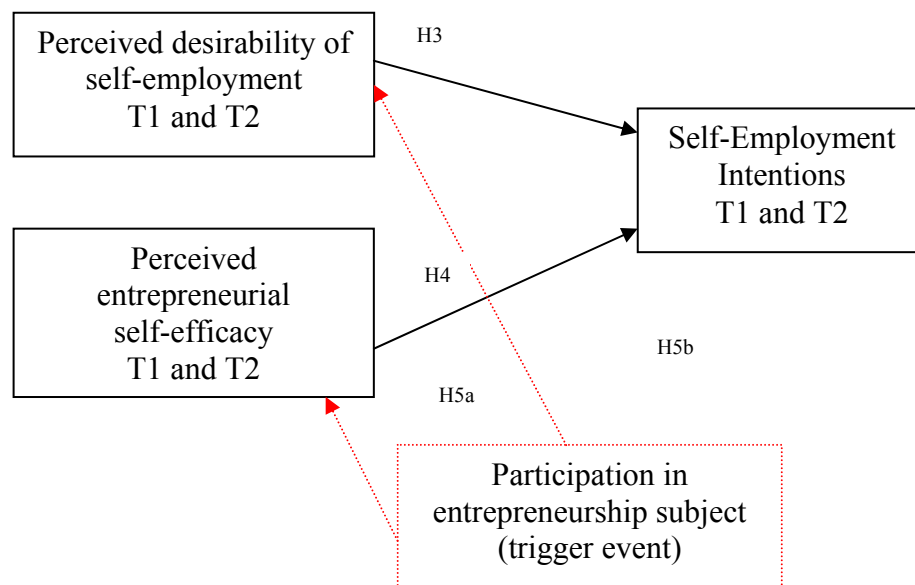
In summary, it is important that entrepreneurship continues to grow and prosper positively affecting the economic growth of nations through job creation and economic development. Entrepreneurship education is an important component of business school education (Peterman and Kennedy, 2003; Zhao et al., 2006) providing a stimulus for individuals making career choices to consider self-employment thereby increasing new venture creation and economic growth. The research in this thesis explored entrepreneurship education from an intervention perspective. One of the objectives was an examination of the influence of entrepreneurship education on student's attitudes and perceptions towards entrepreneurship and their self-employment intentions.

2.5.1 THE REVISED MODEL INCLUDING THE INTERVENTION

As previously discussed, the predictive value of the intentions-behaviour relationship has been established and well received in the psychological literature. That said, the model in this thesis concentrates on the antecedent variables that may relate to the formation of self-employment intentions rather than on the outcome of self-employment intention. The model below (Figure 2.6) shows the intervention – entrepreneurship education and its moderating impact on students' self-employment intentions. Based on empirical support (Krueger, 1993;

Krueger et al., 1995), the Theory of Planned Behaviour (Ajzen, 1991) and Shapero's Entrepreneurial Event Model (Shapero, 1982) have been integrated to provide a strong foundation for the revised research model in this thesis.

Fig: 2.6 The impact of entrepreneurship education



The research model suggests that self-employment intentions are formed by perceived desirability of self-employment and by perceived entrepreneurial self-efficacy; the basic tenant being that intention is formed when students perceive that self-employment is desirable and that they believe they are capable of actually being self-employed. Participation in the entrepreneurship subject is highlighted as a positive ‘trigger event’ as theorised by Shapero and Sokol (1982) to be an event that stimulates a change process. Participation in the entrepreneurship subject is shown as influential to the relationship between both perceived desirability of self-employment and perceived entrepreneurial self-efficacy, and self-

employment intention. This means entrepreneurship education will enhance these relationships however is not essential for the formation of self-employment intentions.

The next section outlines the boundaries of the research problem and the complete revised model is shown in Section 2.7.1, Figure 2.7.

2.6 BOUNDARIES OF THE RESEARCH PROBLEM

As previously discussed, the focus of this research is to identify and validate variables that may influence an individual's intention to seek self-employment as a form of entrepreneurial behaviour. The complete revised model (See Figure 2.7) focuses on the variables that may relate to the formation of self-employment intentions, not the intentions-behaviour relationship. Two explicit boundaries provide justification for the chosen sample and the revised entrepreneurial intentions model. The survey sample is discussed first followed by the explanation of the dependent variable self-employment intentions.

The first explicit boundary in this research is the chosen sample. The quasi-experimental design is composed of the control group and the experimental group. The sample for the experimental group consisted of undergraduate students taking an introductory entrepreneurship subject. Trice et al. (1989) stated that career intent significantly predicts eventual career choice even at the age of adolescence (Krueger, Reilly and Carsrud, 2000). The sample for the control group consisted of undergraduate students taking an introductory strategic management course. All undergraduate students in the university are required to take one or the other of these subjects, and with few exceptions, it is the

student's choice which to take. One of the strengths of this sample is that university students should be at a stage in their life cycle when the process of making career-related decisions is imminent (Harvey and Evans, 1995). This sample was specifically chosen for its relatively homogenous nature and because it allows for the examination of entrepreneurial process prior to actual self-employment behaviour. Due to the sensitivity of initial conditions in any intentions research (Kim and Hunter, 1989), Krueger et al. (2000) recommend studying entrepreneurial phenomena before they occur and to include non-entrepreneurial intending subjects. Purposive sampling of this kind is necessary for proper theory testing (MacMillan and Katz 1992) and has been adopted in this research. The students in this sample are studying degrees in any one or two of the following disciplines: Business, Law, Information Technology, Journalism, Communication, International Relations, Sports Science, Bio Medicine, Film and Television, Social Science and the Arts.

The second boundary in this research is the dependent variable – self-employment intentions. The construct entrepreneurial intentions was defined in Section 2.4.4 as the intention to start a new business (Krueger and Brazeal, 1994; Zhao et al., 2005), the intention to own a business (Crant, 1996), or the intention to be self-employed (Douglas and Shepherd, 2002; Kolvereid, 1996). As stated by Scherer et al., (1989) in their study of role model performance effects on career preference - global career intentions should be on university students' minds, even if specific details about a career have not been formed. The students surveyed in the experimental and control groups possess a broad range of dispositions and experiences, and it is possible that any of these students might consider self-employment as a career option within their specialised fields providing justification for the implementation of entrepreneurial intention as self-employment intention in this research.

In summary, this research is focussed on understanding more about the self-employment intentions of a sample of undergraduate students studying in a first year introductory entrepreneurship or strategic management subject. The research domain, the parent literature, the research problem area, and the research boundaries have all been detailed. The theoretical and practical foundations have been stated and the research hypotheses will be presented next.

2.7 RESEARCH HYPOTHESES

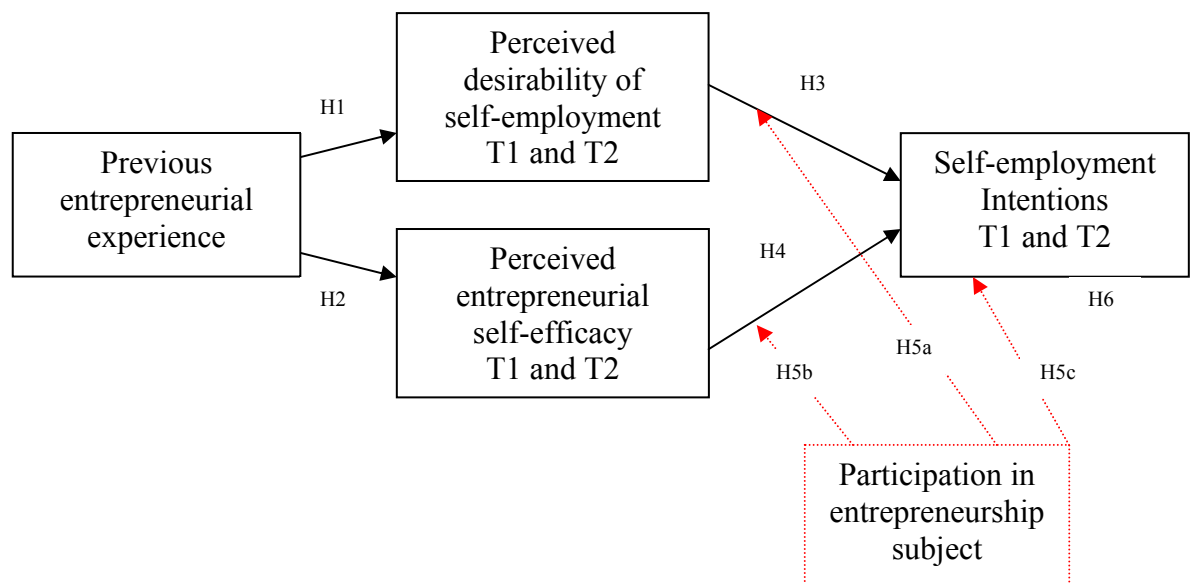
The purpose of this thesis is to provide further understanding about the factors that lead an individual to consider self-employment as a career option. Firstly, this study provides a theoretical explanation, grounded in Shapero's Entrepreneurial Event Formation, The Theory of Planned Behaviour and Social Cognitive Theory. Secondly, the study considers the malleability of previously theorised antecedents to intentions of self-employment, being perceived desirability of self-employment and perceived entrepreneurial self-efficacy. And thirdly, this study empirically evaluates an entrepreneurial intentions model including the impact of previous entrepreneurial experience and a fourteen week introductory entrepreneurship class on students' intentions to be self-employed. In line with this aim, specific variables proposed in the study may play an important role in motivating an individual to pursue self-employment as a career alternative. The overarching hypothesis derived from the research problem is: *How does participation in an entrepreneurship course impact students' intention to be self-employed? And, who is more likely to be impacted by participation in such a course?* The model which follows in Figure 2.7 addresses this

research problem specific to the context of undergraduate university students.

2.7.1 THE REVISED MODEL COMPLETE

Based on Shapero's Entrepreneurial Event model (Shapero and Sokol, 1982), the Theory of Planned Behaviour (Ajzen, 1991), and Social Cognitive Theory (Bandura, 1986) the proposed research model concentrates on variables that may relate to entrepreneurial behaviour through the development of self-employment intentions. Possible interactions between previous entrepreneurial experience and entrepreneurship education are explored and the impact of participation in an entrepreneurship subject on self-employment intentions, as an intervention in a controlled experiment, is investigated.

Figure 2.7 Complete Revised Modified Intentions Model



This section of the thesis presents an overview of the research model followed by three sections covering the stated predictor variables of entrepreneurial intentions; specific hypotheses are then stated. The model has four main components: (1) measures of previous entrepreneurial experience (entrepreneurial role model, family business experience, and work experience), (2) an affective measure of attitude toward self-employment (perceived desirability of self-employment), (3) a cognitive measure - perceived entrepreneurial self-efficacy, and (4) the dependent variable - intention to be self-employed. The overall premise of the study is that self-employment intentions may be formed when students perceive that self-employment is desirable and they believe they are capable of carrying out the behaviour of self-employment, including acquisition of resources.

2.7.2 PREVIOUS ENTREPRENEURIAL EXPERIENCE

Shepherd and De Tienne (2005) associated prior knowledge with the identification of a greater number of more innovative entrepreneurial opportunities. Prior knowledge is defined as an individual's distinctive information about a specific subject matter (Venkataraman, 1977) and may be the result of previously attained work experience or education (Souitaris, 2007).

Adapting Social Cognitive Theory (Bandura, 1986) from a social learning perspective, occupational role models and previous experience are important environmental factors in an individual's career selection process. For the purpose of this study, previous entrepreneurial experience was separated into three different categories: (a) entrepreneurial role model; (b) family business; and (c) work experience. Previous business exposure has been shown to be a

consistent and strong predictor of entrepreneurial intentions (Hisrich, 1990). Crant (1999) 180 students from the United States of America were studied and it found that the children of entrepreneurs have higher entrepreneurial intentions than those without an entrepreneurial parent. Individuals who have family members and/or close friends who are entrepreneurs tend to be more likely to start their own business than those who have not experienced the same level of exposure to entrepreneurship (Collins and Moore, 1970; Cooper and Dunkelberg, 1984). Bowen and Hisrich (1986) suggest that entrepreneurial parents positively influence entrepreneurial career intentions in their children. Furthermore, lower barriers to entry exist for the younger generation through the opportunity they have to capitalise on their entrepreneurial networks (Greve and Salaff, 2003).

Numerous studies isolating the reasons why individuals become entrepreneurs have identified role models and networks as important (Hisrich and Brush, 1984; Kets de Vries, 1977; Scherer et al., 1989; Taylor and Thorpe, 2004; Waddell, 1983). Despite all the positive studies noted above Tkachev and Kolvereid (1999) found the contrary. Their hypothesis stating that the addition of family background, gender and self-employment experience to the Theory of Planned Behaviour added nothing to the explanation of the variance in self-employment intentions was supported. Their results, using a sample of 512 Russian students, indicated that such demographic characteristics as family background and past self-employment experience affected entrepreneurial intentions however only through attitudes, subjective norms and perceived behavioural control.

Taylor and Thorpe (2004) proposed that an individual's networks act as an information resource that can influence decision-making throughout the entrepreneurial

process. Personal, family and peer influences can affect graduates' entrepreneurial motivation and career aspirations (Matlay, 2006) in both a positive or a negative way and thus is an important variable in the model.

Reitan (1997) found that previous business experience strongly influenced intention to become an entrepreneur. Scherer et al. (1989) stated that different learning histories and experiences may distinguish an entrepreneur from a non-entrepreneur. That said, differing backgrounds and experiences may be the distinguishing factors influencing students' choice of self-employment as a career option. Entrepreneurial learning experiences are a likely influence on entrepreneurial behaviour and self-employment intentions through an individual's heightened desirability of self-employment and entrepreneurial self-efficacy. Perceived desirability of self-employment is the attitudinal measure related to both Shapero's (1982) and Ajzen's (1991) theories and is proposed to be influenced by students' previous entrepreneurial experience.

Hypothesis 1: Level of student's previous entrepreneurial experience will influence students' perceived desirability of self-employment.

Perceived entrepreneurial self-efficacy is the cognitive measure and is similar to Shapero's (1982) perceived feasibility and Ajzen's (1991) perceived behavioural control and is also proposed to be influenced by students' previous entrepreneurial experience.

Hypothesis 2: Level of student's previous entrepreneurial experience will influence students' perceived entrepreneurial self-efficacy.

2.7.3 PERCEIVED DESIRABILITY OF SELF-EMPLOYMENT

Perceived desirability of self-employment is an affective judgment (an emotive response) and entrepreneurs use such judgment to make decisions on whether or not to act (Mitchell et al., 2002). An individual's acceptance of self-employment as a desirable career option will be likely related to an intention to engage in self-employment at some time in the future (Segal et al., 2005). Perceived desirability of self-employment is the difference between perceptions of personal desirability in becoming self-employed and organisationally employed. Therefore, 'high' perceived desirability of self-employment actually indicates that the respondent is more in favour of self-employment than organisational employment (Kolvereid, 1996).

It is possible that students possessing desirability for self-employment will consider self-employment as a viable career option following their graduation from secondary school education. The desire of pursuing entrepreneurial action is a function of motivation (McMullen and Shepherd, 2006) and it is reasonable to assume that both participation in entrepreneurship education and previous entrepreneurial experience would be motivating factors for one to consider self-employment as a career option.

Hypothesis 3: Students' perceived desirability of self-employment will influence entrepreneurial intentions.

2.7.4 PERCEIVED ENTREPRENEURIAL SELF-EFFICACY

Perceived entrepreneurial self-efficacy is a cognitive process and entrepreneurs use cognitive reasoning (their perceptual skills) to make decisions on whether or not to act (Mitchell et al., 2002). Based on the Shapero-Krueger framework (Krueger et al., 2000), entrepreneurial self-efficacy is a suitable proxy for perceived feasibility and perceived behavioural control (Segal et al., 2005) as an antecedent to entrepreneurial intention. McMullen and Shepherd (2006) state belief in the ability to pursue entrepreneurial action (perceived entrepreneurial self-efficacy) is a function of knowledge and it is reasonable to assume that participation in entrepreneurship education and previous entrepreneurial experience would increase an individual's entrepreneurial knowledge. Students with high entrepreneurial self-efficacy may be drawn to self-employment's desirable benefits in comparison with the benefits obtained through employment (Segal et al., 2005).

Studies testing the relationship between entrepreneurial self-efficacy and entrepreneurial intent (Boyd and Vozikis, 1994; Chen et al., 1998; Zhao et al., 2005) have proven positive and this relationship is once again tested in this research.

Hypothesis 4: Students' perceived entrepreneurial self-efficacy will influence entrepreneurial intention.

2.7.5 ENTREPRENEURSHIP EDUCATION

In addition to testing the relationship between previous entrepreneurial experience and self-

employment intentions, this research seeks to determine whether or not entrepreneurship education provides additional explanatory value in regard to students' self-employment intentions beyond that which is accounted for by previous entrepreneurial experience.

Entrepreneurship education including a range of complementary entrepreneurial activities is the intervention in this research in the form of a fourteen week introductory subject delivered to undergraduate students. Gartner and Vesper (1994) and Kuratko (2005) recommend that entrepreneurship programmes offer a balanced range of activities. Gimeno et al., (1997) refer to entrepreneurial human capital as education-derived entrepreneurial knowledge that improves individuals' opportunity identification ability. It stands therefore, that entrepreneurial knowledge learned through participation in an entrepreneurship subject should improve participants' opportunity-identification ability and positively increase their entrepreneurial self-efficacy and perceptions towards self-employment and future self-employment intention.

As noted earlier, according to Bandura (1986), there are four ways in which to increase self-efficacy. These are (1) mastery of the behaviour through the successful performance of successive steps, (2) vicarious observation or experience, (3) verbal persuasion and reinforcement, and (4) management of emotional arousal. The entrepreneurship subject intervention in this research offers four components: (1) lectures – a taught component by practitioners and academics; (2) a feasibility planning and writing exercise including one-on-one workshops and market research development; (3) an 'interaction with practice' component, which includes talks with guest entrepreneurs; and (4) video case study methods including problem-solving and class discussion. Furthermore, students were

taught the successive steps involved in feasibility planning and start-up; how to effectively communicate with financiers and suppliers; and how to alleviate the stress involved with self-employment. In addition, students observed videos of entrepreneurs in action and attended lectures led by guest entrepreneurs presenting their entrepreneurial experiences. Moreover, verbal persuasion and reinforcement by the instructors further emphasised the messages in the videos and lectures in an attempt to increase entrepreneurial knowledge, self-efficacy and desirability for entrepreneurship.

When applied to self-employment intention, desirability for self-employment and entrepreneurial self-efficacy can be increased through participation in the abovementioned components of the entrepreneurship education subject supplied as the intervention in this research. It is proposed that the intervention moderates the relationships between perceived desirability of *self-employment* and self-employment intentions; and between perceived entrepreneurial self-efficacy and self-employment intentions. That is entrepreneurship education is expected to enhance the relationship between these variables.

Hypothesis 5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.

Hypothesis 5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.

Hypothesis 5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.

An important point noted in the study by Peterman and Kennedy (2003) was the difficulty in generalising their findings across entrepreneurship education in general due to the wide variety and variation in the content and pedagogy of programs available. Greene and Johannisson (2004) agreed with this view confirming the lack of uniformity in entrepreneurship programs worldwide. More recently Greene and Rice (2007) compiled the work of twenty-nine respected authors in the field into a book – ‘Entrepreneurship Education’ to assess the current state of and to plan for entrepreneurship education uniformity in the future.

2.7.6 INTENTION TO BE SELF-EMPLOYED

A portion of individuals with a unique combination of psychological traits, previous relevant entrepreneurial experience and knowledge may be likely candidates to engage in entrepreneurial behaviour at some stage in their life cycle. The intention to be self-employed may be formed by a ‘trigger event’ (Shapero and Sokol, 1982) that changes an individual’s situation or future plans (e.g., choice of future employment impacted by participation in an entrepreneurship subject). It is possible that participation in an entrepreneurship subject be considered a ‘trigger event’, particularly if other situational conditions exist (e.g., role model, financial support, opportunity). As a result, individual’s self-employment intentions may surface.

Hypothesis 6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.

In summary, The first and second hypotheses relate to previous entrepreneurial experience; these hypotheses specify a relationship between previous entrepreneurial experience (as one variable with two levels – high and low) and perceived desirability of self-employment in H1; this same relationship is specified with perceived entrepreneurial self-efficacy in H2. These relationships are tested taking into account the duration and postiveness of the previous entrepreneurial experience. Hypotheses 3 and 4 are concerned with the relationship between perceived desirability of self-employment and self-employment intentions; and perceived entrepreneurial self-efficacy and self-employment intention. Hypotheses 5a and 5b relate to entrepreneurship education and its effect on the relationships between perceived desirability of self-employment and self-employment intentions, and perceived entrepreneurial self-efficacy and self-employment intentions. Hypothesis 6 is concerned with the difference between the control group and the experiment group in relation to the variation in self-employment intentions between Time One and Time Two.

2.8 CONCLUSION

This chapter provided a review of the entrepreneurship, the individual entrepreneur, and the entrepreneurship education research domain, outlined the associated foundation theories, and highlighted the importance of this research. A revised model and the supporting research hypotheses have been discussed. As a result of this review and in conclusion of this chapter, the research problem will be examined through the following hypotheses:

Hypothesis 1: Level of student's previous entrepreneurial experience will influence students' perceived desirability of self-employment.

Hypothesis 2: Level of student's previous entrepreneurial experience will influence students' perceived entrepreneurial self-efficacy.

Hypothesis 3: Students' perceived desirability of self-employment will influence self-employment intentions.

Hypothesis 4: Students' perceived entrepreneurial self-efficacy will influence self-employment intentions.

Hypothesis 5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.

Hypothesis 5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.

Hypothesis 5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.

Hypothesis 6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.

Chapter Three of this thesis proceeds by detailing the methods used to test these hypotheses. Chapter Four provides the results and the analysis and discussion of the research is provided in Chapter Five concluding the thesis and followed by a list of tables, figures, references and appendices.

3. RESEARCH METHOD

3.1 INTRODUCTION TO THE CHAPTER

Chapter One of this thesis identified the problem area of the research based on gaps found in the literature. Chapter Two reviewed the extant literature and presented a model of entrepreneurial intentions, modified for the current research. This chapter describes the research method and statistical procedures employed to empirically test the research propositions. The method is capable of falsifying the model (Popper 1979); a fundamental requirement for any test of theory. The chapter proceeds as follows: Section 3.2 reintroduces the research model; Section 3.3 provides a summary of the experiment; Section 3.4 discusses sampling issues, describes the data collection procedures, and provides justification of the chosen method; Section 3.5 describes the instruments used to measure the relevant variables and finally Section 3.6 describes the quantitative techniques used to test the proposed hypotheses and the methodological limitations.

3.2 THE RESEARCH MODEL

The focus of this research is on the impact of participation in an entrepreneurship course on students' self-employment intentions and the antecedents to these intentions. It is a widely held view that previous business exposure influences the development of entrepreneurial-related attitudes (Morris and Lewis, 1995; Carr and Sequeira, 2007) and only indirectly influences intentions (Krueger and Carsrud, 1993). Previous models of entrepreneurial intention have established that different types of previous business exposure and entrepreneurial-related attitudes and cognitions are antecedents to

entrepreneurial intention (Kolveroid et al., 2006; Krueger et al., 2000; Shapero, 1982; Zhao et al., 2006). The variables of interest in this thesis maintain these categories with the addition of an intervention – in the form of general business education versus entrepreneurship education. The modified intentions model includes the exogenous variables of previous entrepreneurial experience, the educational treatment, and the endogenous variables of perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions.

As discussed in chapter Two, the majority of previous studies measuring the impact of entrepreneurship education on entrepreneurial intention have not utilised an experimental method with a control group, with the exception of Peterman and Kennedy (2003) who tested a sample of 224 high school students comprising an experiment group (n=109) of participants in a junior youth achievement program and a control group (n=111) of students who did not participate in the program. Their sample was comprised of high school students between the ages of fifteen and eighteen and the intervention was a youth program for young achievers, not a tertiary entrepreneurship education course. High school students are at a different stage in their career life-cycle compared with tertiary students where career decisions are likely to be more imminent. The purpose of this experimental study is to understand more about undergraduate university students' self-employment intentions and to explore the effect of exposure to entrepreneurship education and previous entrepreneurial experience on university students' perceived desirability of self-employment and their perceived entrepreneurial self-efficacy.

3.3 OVERVIEW OF THE QUASI-EXPERIMENT

The hypotheses were tested using a behavioural quasi-experiment pretest-posttest non-equivalent control group design where undergraduate university students in two groups, the treatment and the control group, were surveyed measuring the variables specified in the models below at Time 1 and at Time 2.

Figure 3.1 Time One Model

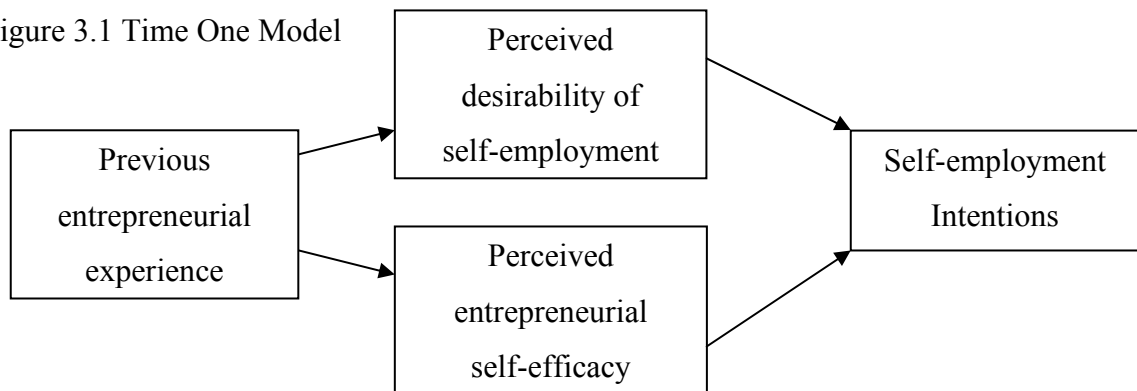
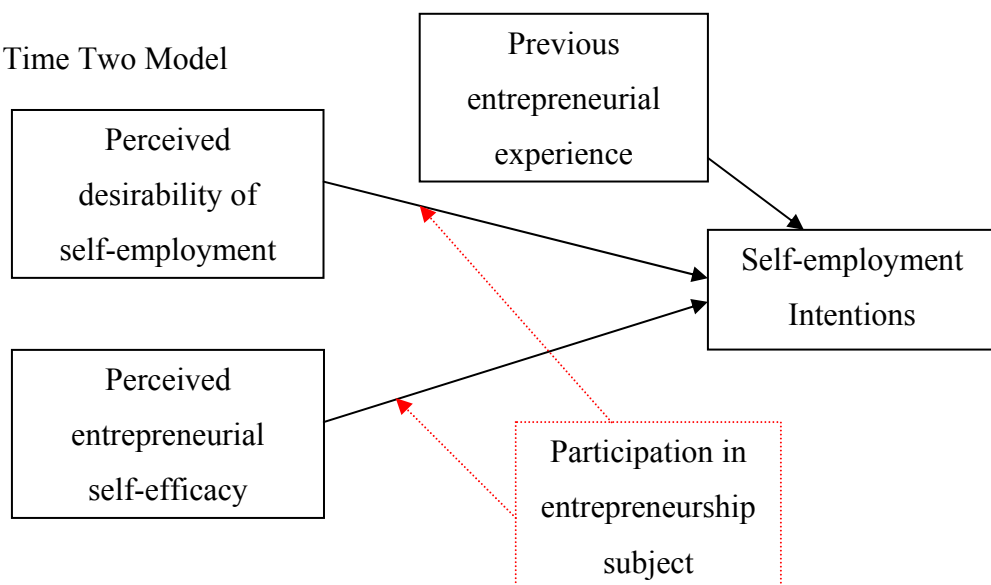


Figure 3.2 Time Two Model



Data were collected across two semesters in two of the university's introductory business classes - entrepreneurship and strategic management. The treatment group consisted of

undergraduate students taking the first-year entrepreneurship subject and the control group consisted of undergraduate students taking the first-year strategic management subject. According to Sekaran (2000) a representative sample should allow findings from the sample to be generalised to the population under investigation. The treatment and the control groups are both comprised of young adults facing career decisions, and therefore could be construed as representative of the population of interest. Pre-existing differences between students in the control group and students in the experiment group were measured before exposure to the treatment as recommended by Judd et al.. (1991). Utilising this pretest-posttest research design each participant served as his or her own control, alleviating any internal validity concern through the lack of random-assignment of groups.

3.4 THE SAMPLE AND DATA COLLECTION PROCEDURES

3.4.1 THE SAMPLE

Research participants were undergraduate students participating in the entrepreneurship and strategic management subjects across two semesters in 2006. Both sets of subjects met for 4 hours a week for 14 weeks in a semester. Subject course outlines are provided in Appendix (D) and a list of the key topic areas included in each subject is specified in Table 3.1 below.

Table 3.1

Key topic areas and skills	Entrepreneurship	Strategic Management
Opportunity recognition and creativity	✓	

Opportunity evaluation	✓	
Feasibility planning		
Business Management	✓	✓
Strategy formulation	✓	✓
Industry research	✓	✓
Competitive analysis		
Information systems		✓
Organisational structure	✓	✓
Financial analysis	✓	✓
Operations	✓	✓
Marketing	✓	✓
Managing people	✓	✓

Specifically, the entrepreneurship subject introduced students to the importance of entrepreneurs to society and economic development, and the opportunity identification and evaluation process, not covered in the strategic management course.

The inclusion of students from the strategic management course provided a suitable control group to compare the experiment effect of entrepreneurship education due to the

homogeneity of both groups. All undergraduate students in this particular university are required to take one or the other of these subjects, and with few exceptions, it is the student's choice which to take. These first-year classes provide a sample of students studying for a bachelor degree in any one of the following disciplines: Business, Law, Information Technology, Journalism, Communication, International Relations, Sports Science, Bio Medicine, Film and Television, Social Science and the Arts. Whilst these are not all business degrees, it is conceivable that any of these students might consider self-employment as a career option within their specialised fields.

Despite some scholars regarding the use of students as inappropriate subjects in behavioural research (Copeland, Francis and Strawser 1973; Robinson, Stimpson, Huefner and Hunt 1991), there has been positive support by others for their legitimate use, particularly in relation to research into entrepreneurial intent and behaviour (Khera and Benson, 1970; Krueger, Reilly and Carsrud, 2000). The use of a student sample is the best possible sample in this study and justifiable as the respondents are at a stage in their life-cycle when they are most likely making career related decisions (Harvey and Evans, 1995). It is also feasible that some of the students may have long-range goals to be self-employed and may not see starting their own business as an immediate proposition after graduation.

Students from two successive semesters of both the strategic management and the entrepreneurship subjects participated in the research. This provided a total sample of four hundred and twenty-nine (429) survey respondents; one hundred and ninety three (193) in the first semester and two hundred and thirty six (236) in the second semester. By combining the two semesters one hundred and ninety (190) students were in the treatment

group and two hundred and thirty-nine (239) students were in the control group. Students in the first semester of data collection were not made aware that the data collection would proceed in the second semester therefore second semester students would not have been cued by their first semester peers. In all, two hundred and forty-four (244) of the respondents were male (56.8%) and one hundred and eighty-five (185) were female (43.2%). The average student age was twenty-one years ($sd = 4.09$) with 92% falling between the ages of seventeen to twenty-five years. Forty-two countries were represented in the sample, although the majority of students were from Australia (43%), followed by the United States of America (12%), Germany (10%) and China (4%).

3.4.1.1 THE SAMPLE SIZE

Only participants who submitted both pre and post-test questionnaires, had not taken either of the courses previously, and were not concurrently enrolled in both courses were included in the analysis. Six students attended both subjects and their surveys were not included. The entrepreneurship subject had a total enrolment of two hundred and forty-six (246) across the two semesters. Of these, two-hundred and eleven (211) students participated in the survey at Time One (week two of semester), and two hundred (200) at Time Two (week twelve of semester). Three students left the subject before the Time Two data collection so were not eligible to continue participation, and two completed the Time Two survey but were not present for the Time One survey. These unmatched respondents' surveys combined with missing data reduced the effective sample size for the treatment group to one hundred and ninety (190). The strategic management subject had a total enrolment of two hundred and seventy-one (271) across the two semesters; of these, two hundred and forty-six (246)

students participated in the survey at Time One, and two hundred and forty-five (245) at Time Two. Five students left the subject before the Time Two data collection, and four completed the Time Two survey but were not present for the Time One survey. These unmatched respondents' surveys combined with missing data reduced the effective sample size for the treatment group to two hundred and thirty-nine (239). Overall this provided an effective sample size of four hundred and twenty-nine (429) across the two semesters, consisting of one hundred and ninety (190) in the treatment group and two hundred and thirty-nine (239) in the control group. See Table 3.2 below.

Table 3.2

Subjects	Entrepreneurship	Strategic Management
Total enrolments	246	271
Time one and Time two Matched surveys submitted	198	246
Less Excluded due to missing data and/or enrolment in both courses	8	7
Total effective sample size	190	239

3.4.1.2 SAMPLE SIZE AND STATISTICAL POWER

Insufficient sample size may cause incorrect statistical conclusions due to reduced power in

the study. The required sample size is dependent on the statistical analysis employed (Mendenhall and Sincich, 2003) and has a direct impact on the power of the research. Multiple regression analysis and repeated-measures ANOVA methods have been used to test the hypotheses in this study and the total effective sample size of three hundred and eighty-eight (388) is more than adequate to perform the analysis required based on accepted theory determining generalisable sample sizes. Hair et al. (1998) suggest between fifteen to twenty observations for each independent variable if the sample is representative, indicating a minimum of eighty (4×20) observations would be adequate for this research. Stepwise regression was not chosen as the number of observations required increases to fifty to one and in the separate assessment of the control and the treatment groups this study would not provide sufficient power, justifying the chosen method of multiple regression. Repeated-measures designs are more powerful than a randomised-groups design (Tabachnick and Fidell, 2007) as the sum of squares for differences among cases are subtracted from the error term thereby increasing power. The analysis procedures adopted are discussed in detail in Section 3.6 following a discussion of the study's measures.

3.4.2 THE DATA COLLECTION PROCEDURE

The instructors, course content, and delivery method for each subject across the two semesters of data collection remained the same. The data were collected by an independent university administrative officer during scheduled lecture periods in weeks two and twelve of the fourteen week semesters. See Appendix (E) for a copy of the script read by the administrator prior to students completing the surveys. Ethical clearance was obtained from the university and the survey was administered following strict professional guidelines. Students were given clear instructions that participation was entirely voluntary.

Instructors allocated thirty minutes of class time to enable students to complete the pre-test and post-test surveys. This procedure increased the response rate due to students being given a task with time to complete allocated immediately.

3.4.2.1 THE PRE-TEST

Students were greeted by the administrator in the lecture period in the second week of the semester. Participants were then provided with two items. The first was a brief explanatory statement about the survey, required as a condition for approval by the university ethics committee. This document indicated to students the time required to complete the survey, the confidentiality measures undertaken regarding the use of the data, the optional nature of the exercise, and their incentive should they choose to participate. Respondents were offered two percent additional credit toward their final grade in the subject for completing both the pre-test and post-test surveys. Details of the opportunity for students to participate in this research and receive two points credit towards their subject assessment were first provided in the course outlines available to students prior to attending the class. At this time students were also provided with information regarding an alternative exercise to receive two points towards their subject assessment should they not wish to participate in the research experiment yet still receive additional credit.

The second item provided in the week two lecture was the pre-test questionnaire. See Appendix (F). The pre-test survey included a request for student name and identification number, demographic information and answers to questions relating to the independent and dependent variables in the study. Table 3.3 below indicates pre-test and post-test variables measured. T1 indicates measurement at Time One; T1 and T2 indicates measurement at both

Time One and Time Two.

Table 3.3

Independent Variables	Time tested
Controls - Age, gender, nationality, course taken	T1
Previous entrepreneurial experience	T1
Perceived desirability of self-employment	T1 and T2
Perceived entrepreneurial self-efficacy	T1 and T2
Dependent Variable	Time tested
Self-employment intentions	T1 and T2

3.4.2.2 THE POST-TEST

The post-test survey was administered by the same independent university administrative officer during the lecture period in the twelfth week of the semester. Once again students were reminded of their options to participate or not. Following collection of the completed surveys students were thanked, debriefed, and any questions were addressed at that time. The post-test survey did not repeat the demographics or previous entrepreneurial experience measures assessed at the pre-test. Time One and Time Two responses were matched by student identification number.

3.4.3 EXPERIMENTAL DESIGN ISSUES

An experimental method was chosen to test the impact of the entrepreneurship subject on students' self-employment intentions. By allowing the researcher control over the manipulation of the independent variable through the use of a control group, the experimental methods allows for testing of causal hypotheses. A quasi-experiment was employed to allow the experimental element to occur in its natural setting, i.e., a university subject that is required in the normal course of the students' bachelor degrees. The quasi-experimental design does not control for the influence of extraneous variables quite as well as the randomised-group experimental design, however the former can yield accurate causal inferences when confounding extraneous variables are considered and minimised (Christensen, 2004). Justification of the external validity of the research design is provided later in this section. The absence of random assignment in the quasi-experimental design in this study was controlled by confirming the absence of pre-test differences between the control and the experiment group across the dependent variable and the independent variables correlated with the dependent variable. The quasi-experimental pretest-posttest design issues are discussed further in this section.

Validity is of concern in any experimental pre-test post-test design study (Christensen, 2004) due to four separate issues including: 1.) statistical conclusion validity; 2.) internal validity; 3.) construct validity and 4.) external validity. These are discussed in turn next.

1.) **Statistical conclusion validity** relies on accurate inferences or conclusions drawn from the statistical analysis of the data. The inference of causality is conditional upon three criteria

being met: a) covariation, b) temporal precedence, and c) that a spurious relationship does *not* exist. These three conditions are explained further here:

a) Covariation infers that there is a relationship between application of the treatment and a change in the specified relationship between an antecedent and predicted outcome. It is not possible to perfectly estimate the effects of random variables, however, it is possible to accept that covariation exists given the probability of a Type one error (Cook and Campbell, 1979). Statistical conclusion validity of this type accounts for both sampling and non-sampling error through measures of statistical significance (Mitchell and Jolley, 2001) with most researchers setting the probability of mistaking chance variation with treatment effect variation at less than five in one hundred ($p < 0.05$). In this study covariation is not an issue as it is tested statistically in the cause-effect process of the experiment.

b) Temporal precedence implies that changes in the behaviour must occur after the treatment, not before. The latter is automatically established in this experimental study as the treatment is administered between the pre-test and post-test and therefore the cause is forced to precede the effect.

c) Concluding that the change in behaviour is not due to confounding factors other than the treatment infers that a spurious relationship does not exist between the dependent and independent variables and is an important issue to consider in the quasi-experimental design. Causal interpretations can be made from such designs, however only when rival explanations can be shown to be implausible. Three principles can be implemented to rule out rival explanations (Shadish et al., 2002); these are: 1.) identification and study of possible plausible threats to internal validity; 2.) control by design – including additional design elements in the study; and 3.) coherent pattern matching – only relevant when a very complex prediction is made about a causal hypothesis.

2.) **Internal validity** relates to the validity of the inference that a causal relationship exists between the dependent and independent variables. Threats to internal validity include: a) maturation; b) history; c) testing; and d) instrumentation (Peter, 1981). Each of these will be discussed in turn in relevance to this study next:

a) Maturation bias can occur due to natural physiological changes in the respondent between pre-test and post-test (Mitchell and Jolley, 2001). In the case of this study this threat is clearly controlled for as any maturation effect that may produce a difference in the experimental group will also produce a difference in the control group.

b) Participants may change within the period of the study due to a history effect - changes (other than the treatment) that occur in their own situations or environments (Isaac and Michaels, 1997). Again, in the case of this study, this threat is clearly controlled for as any history events that may produce a difference in the experimental group will also produce a difference in the control group.

c) Testing can be an issue when respondents are made more aware of the dependent variable under study by actually completing the time one test. In this study both the treatment and the control groups complete all surveys and it is equally probable that should a testing effect occurs in one group, it may also occur in the other, thereby controlling for the testing effect. Secondly, there is a delay of eleven weeks in time between Time one and Time two testing, and the survey was not discussed in any of the classes during that period. Given this time lag, combined with the fact that university students have very busy schedules, testing effect is not considered a serious issue in this study.

d) Providing the same measurement is applied in surveys at both time periods, instrumentation is not a problem (Mitchell and Jolley, 2001). Given that the same validated scales were utilised in this study at both Time one and Time two, any instrumentation issues would be equally manifested in both the experimental and the control group.

3.) **Construct validity** refers to the validity of the extent that a match exists between the constructs and the operations used in the study. Threats to construct validity (Shadish et al, 2002) include: inadequate explanation of the construct, construct confounding, mono-operation bias, mono-method bias, level of construct, treatment-sensitivity, reactive self-report changes, reactivity to the experimental situation, experimenter effects, novelty effects, compensatory equalisation, compensatory rivalry and treatment diffusion. Two of these threats, experimental situation reactivity and experimenter effects, are discussed further as their biasing effect on the outcome of experimental studies has received much attention in the literature (Christensen, 2004).

a) Experimental situation reactivity suggests that, due to the idiosyncrasies of human behaviour, research participants may confound the results of the experimental manipulation due to demand characteristics (Orne, 1962) and positive self-representation (Christensen, 1977). Demand characteristics can be described as participant interpretation of any of the cues, instructions or rumours present in the experimental setting, and positive self-representation (or social desirability bias) refers to participants need to portray themselves positively. To minimise these biases in this experimental research the instructors were not present when the participants completed the surveys, thereby reducing the association between the survey questions and the specific subject of study. Secondly, students were seated in spacious lecture theatres whilst responding to both Time one and Time

two surveys allowing for adequate privacy thereby reducing the occurrence of peer pressure whilst answering questions. Thirdly, the surveys were administrated and collected by an independent person during scheduled lecture periods and participants were advised that the information was not related in any way to their grading for the subject and asked to be honest when answering the questions.

b) Experimenter effects relates to the biases the researcher may bring to the study based on their attributes and expectancies (Rosenthal, 1991). Experimenter attributes refer to the biosocial (eg. age, sex, religion) and psychosocial (eg. dominance and social behaviour) attributes of the researcher with concern for their affect on the research participants responses. These effects were controlled in this study as firstly, participation was voluntary, secondly, the instructors were not present when the surveys were completed, and thirdly, the research study was not discussed at any time during the period of study for the subject (i.e. between pretesting and posttesting).

The quasi-experimental method is considered high in internal validity relative to other methods (Cook and Campbell, 1979; Judd et al., 1991) and has been justified to be the case in this study.

4.) **External validity** relates to the generalisability of the experiment across different settings, people, and treatments. In this study the people used in the sample are not an issue as tertiary students anywhere in the world are at a stage in their life cycle when they are most likely making career related decisions, and therefore they are the specific subject under study. With regard to the treatment, entrepreneurship education, it is more difficult to defend

external validity given that entrepreneurship as a subject is taught worldwide, not only using a variety of different teaching styles and content, but also being taught over different time periods. Therefore the results of this study could be considered generalisable providing that the treatment was administered using the same content and structure as that implemented in the current study. The measures employed are discussed next.

3.5 THE MEASURES

The survey questionnaire developed for this study utilised validated scales, adapted where required for the target audience, based on exploratory research. The origin of each of the scales, and their adaptation, is discussed further in each constructs' section. To ensure construct validity all scales were tested in SPSS 15.0 for internal validity and overall scale reliability with Cronbach alpha measures for each presented in this section, followed by Table 3.4 highlighting the original authors' scales' formats and reliability measures.

3.5.1 THE DEPENDENT CONSTRUCT

3.5.1.1 ENTREPRENEURIAL INTENTION

For the purpose of this study, entrepreneurial intention is defined as the intention to be self-employed. It was measured by five statements adapted from Krueger and Carsrud (1993), Chen, Greene, and Crick (1998) and Davidsson (1995), utilising a five point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). As undergraduates are at an early career choice stage, this scale provides a range of statements from interest in self-employment or business ownership to long-term entrepreneurial intent. The first statement: "I

am very interested in setting up my own business” suggests a strong interest toward self-employment /business ownership. The next four statements in accordance with Armitage and Connor (2001) clearly distinguish intention from desirability: “I am working towards owning my own business”, “I intend to start my own business within the next two years”, “I intend to start my own business within the next five years”, and “I intend to start my own business within the next ten years” are clearly intention items including a temporal element. Adopting Davidsson’s approach, both short and long term intent has been captured in the items in this scale. Responses from the five statements were averaged over the five questions to create a total average score (Chen et al. 1998). In this study, the measure was collected at Time 1 (Cronbach alpha = 0.87) and Time 2 (Cronbach alpha = 0.85).

3.5.2 THE INDEPENDENT CONSTRUCTS

3.5.2.1 PREVIOUS ENTREPRENEURIAL EXPERIENCE

Measures of prior exposure to entrepreneurship should consider both quantity (breadth) and quality (positiveness) of that experience (Krueger 1993). To capture these elements, respondents’ previous business experience was measured by an adaptation of six questions previously used by Krueger (1993) and Peterman and Kennedy (2003). Five dichotomous questions (with answers coded 1 for yes, 0 for no), “Have you ever held a job where you were paid?”; “Have your parents ever started their own business?”; “Have you worked in your family business?”; “Whether or not your parents have started a business”, and “Do you have a role model involved in their own business?” were asked. Positive responses required further information related to quality of experience and was measured by further questions requesting a “Positive” or “Negative” response (coded 1 for positive, 0 for negative) to the

business exposure. ‘Previous entrepreneurial experience’ was measured by the sum of the yes-no responses related to quantity and quality of entrepreneurial experience. Total scores ranged from zero to seven and were grouped in to two categories – high or low. High being total scores of five and above, low being total scores of four or less, including zero. The variables high previous entrepreneurial experience and low entrepreneurial experience were then coded 1 and 2 respectively. The ‘previous entrepreneurial experience’ measure was collected only at Time One.

3.5.2.2 PERCEIVED DESIRABILITY OF BECOMING AN ENTREPRENEUR

In accordance with Armitage and Connor (2001), it is important to distinguish intention from desirability as intention mediates the relationship between desirability and behaviour. The perceived desirability measure reflects the respondent’s attitude towards working for themselves (self-employment), and how attractive the idea of owning their own business is for them. Desirability (eg. “I desperately want to”) is clearly differentiated from the perceived entrepreneurial self-efficacy measure (eg. “I believe I can.”). The four perceived desirability items used in this study were adapted from Krueger (1993) and Kickul and Krueger (2004). Sample questions such as, “The idea of owning my own business is very appealing to me”, and “I cannot imagine working for someone else” assess how desirable self-employment is for the respondent. Responses were indicated on a five point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In this study, the average of the total items provided a perceived desirability score of Time 1 (Cronbach alpha = 0.84) and Time 2 (Cronbach alpha = 0.83).

3.5.2.3 PERCEIVED ENTREPRENEURIAL SELF-EFFICACY

Perceived entrepreneurial self-efficacy is a specific form of self-efficacy (Bandura, 1997) and is an individual's perceptions of their own entrepreneurial abilities (Forbes 2005). This study utilises an adapted measure based on those previously employed by Chen et al. (1998) and Forbes (2005). Fifteen of the sixteen item-scale addressed three different roles associated with entrepreneurial business ownership. The three tasks included opportunity recognition and innovation; business, financial and human resource management, and coping with risk and unexpected challenges. Efficacy for each task was assessed with five items. An example of statements from each task follow: Opportunity recognition and innovation – “I believe I can create products or services that fulfil customers' unmet needs” and “I believe I can think creatively in business”; Management skills – “I believe I can establish and achieve goals and objectives related to a new business venture” and “I believe I can identify and build a management team to develop a business”; and Coping with risk and unexpected challenges – “I believe I can work productively under continuous stress and pressure from work” and “I believe I can tolerate unexpected changes in business conditions”. The sixteenth and final statement was a global measure of entrepreneurial self-efficacy – ‘If I wanted to, I believe I could successfully start my own business.’. Ratings were made on a five point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Using a Likert scale to measure self-efficacy as an alternative to traditional measures provides an acceptable and practical self-efficacy measure offering comparable reliability-error variance, factor structure, discriminability and equivalent levels of prediction. (Maurer and Pierce, 1998). The adapted 16-item instrument is shown in Table 3.6 at the end of this chapter. In line with Chen et al. (1998) and Forbes (2005), a total

entrepreneurial self-efficacy scale score was calculated for each respondent by averaging all of the items in the scale. The scale adapted for this study had a Cronbach alpha reliability coefficient of 0.89 (T1) and 0.90 (T2).

A table of the original scales is shown below providing details of the authors and the scales' formats and reliabilities.

Table 3.4

Construct/Scale	Original Authors	Format	Items	α
Perceived desirability of self-employment	Krueger (1993)	Likert	4	0.77
Perceived entrepreneurial efficacy	Chen et al. (1998)	Likert	16	0.92
	Forbes (2005)	Likert	15	0.85
Self-employment intentions	Davidsson (1995)	Likert	4	0.80

The table below summarises the measurement scales' reliabilities for this study.

Table 3.5

Scale	Format	Items	α
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Perceived desirability of self-employment	Likert	4	T1	0.84
			T2	0.83
Perceived entrepreneurial self-efficacy	Likert	16	T1	0.89
			T2	0.90
Self-employment intentions	Likert	5	T1	0.87
			T2	0.85

Table 3.7 at the end of this chapter provides a list of the constructs used in this study and their items.

3.5.3 DEMOGRAPHIC INFORMATION AND CONTROL VARIABLES

Demographic information was collected at time one including student's age, gender and ethnicity as control variables in the analysis. Age was recorded as a continuous variable and gender and ethnicity were recorded as noncontinuous categorical variables. The treatment and the control group, students of entrepreneurship and students of management were originally recorded as 1 and 2 respectively and subsequently recoded 1 and 0 respectively for inclusion as dummy variables in regression analysis.

3.6 QUANTITATIVE ANALYSIS PROCEDURES

The analysis was conducted in several stages using correlational analysis, independent t-tests,

multiple regression analysis, repeated-measures, and mixed within-between analysis of variance (ANOVA) methods. In the first stage preliminary analysis was performed. First, the data were screened to check for errors by inspecting the frequencies of each variable, including all the individual items that make up the scales. Then descriptive statistics were assessed to describe the characteristics of the sample and to check for statistical conclusion validity by looking for violation of the assumptions underlying the statistical techniques used to address the specific research questions.

3.6.1 STATISTICAL CONCLUSION VALIDITY

Improving statistical conclusion validity is possible through examination of the data for violation of the assumptions underlying multivariate normality, homoscedasticity and linearity (Pallant, 2005). Descriptive analysis incorporating results from tests of skewness, kurtosis, Shapiro-Wilk, Kolmogorov-Smirnov, and Q-Q plots on the data for this study were observed as normal and are presented in Table 3.6 below.

Table 3.6 Descriptive analysis of individual indicators.

Variable	Mean	S.D.	Skewness	Kurtosis	Spiro- Wilks	Kolm- Smirn	Q-Q Plot
PEE	4.28	2.086	-0.169	-1.143	0.000	0.000	✓
PDSE 1	3.49	0.856	-0.181	-0.464	0.000	0.000	✓
PDSE 2	3.54	0.877	-0.210	-0.534	0.000	0.000	✓

PESE 1	3.81	0.482	-0.121	0.855	0.001	0.000	✓
PESE 2	3.83	0.484	-0.044	0.638	0.001	0.001	✓
SEI 1	3.18	0.959	-0.009	-0.399	0.000	0.000	✓
SEI 2	3.30	0.956	-0.255	-0.296	0.000	0.000	✓

PEE (Previous entrepreneurial experience); PDSE (Perceived desirability of self-employment); PESE (Perceived entrepreneurial self-efficacy); SEI (Self-employment intentions).

3.6.2 ANALYSIS OF DATA

The analytical techniques to test the hypotheses in this study were performed using SPSS 15.0 in four stages to test both the within subjects and between subjects hypotheses. In the first instance correlational analysis and independent-samples t-tests were performed to determine relationships and compare the mean scores of students with low (n=166) or high (n=231) previous entrepreneurial experience on students' perceived desirability of self-employment and perceived entrepreneurial self-efficacy to test Hypotheses 1 and 2 as follow:

Hypothesis 1: Level of student's previous entrepreneurial experience will influence students' perceived desirability of self-employment.

Hypothesis 2: Level of student's previous entrepreneurial experience will influence students' perceived entrepreneurial self-efficacy.

Correlational analysis establishes whether or not a relationship exists between two variables however does not provide evidence of causation. The t-test determines the statistical

significance of the difference in means scores between the two independent groups (Hair et al., 1998) by looking at the standard error of the difference in the group means. Providing the absolute t value is greater than the critical value, the null hypothesis may be rejected, indicating that there is a significant difference in the group means.

In the second stage, multiple regression analyses were conducted as follows: Firstly, perceived desirability of self-employment and perceived entrepreneurial self-efficacy were regressed on self-employment intention to test Hypotheses 3 and 4 as follow:

Hypothesis 3: Students' perceived desirability of self-employment will influence self-employment intentions.

Hypothesis 4: Students' perceived entrepreneurial self-efficacy will influence self-employment intentions.

Multiple regression analysis allows for the examination of relationships between several independent variables and one dependent variable. Additional to the independent variables' collective prediction of the dependent variable, this statistical method determines the individual contribution of each of the individual variables to the dependent variable, both directionally and magnitudinally (Hair et al., 1998).

Tests of the treatment effects are considered in Hypotheses 5 and Hypotheses 6. Analysis of variance (ANOVA) is another regression technique of use when the experimental design includes more than one independent variable and independent variables with more than one level (Mitchell and Jolley (2001). Mixed between-within ANOVA allows the researcher to compare between groups with two or more levels (eg. control versus treatment group), and

within groups repeated measures (eg. at different time periods) (Pallant, 2005). In the third stage, a mixed between-within ANOVA including Time one and Time two data, across the three variables perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions was used to answer the question: Does the treatment, entrepreneurship education, impact students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions? and to test Hypotheses 5a, 5b, and 5c as follow:

Hypothesis 5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.

Hypothesis 5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.

Hypothesis 5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.

In the fourth stage a mixed between-within subjects ANOVA was used to test the difference between students with high or low previous entrepreneurial experience self-employment intent between T1 and T2 to answer the question: Which group (students with high or low previous entrepreneurial experience) is impacted most in terms of self-employment intentions following the entrepreneurship education intervention?

The final hypothesis is stated below:

Hypothesis 6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.

3.6.3 METHODOLOGICAL LIMITATIONS

Methodological limitations relating to statistical conclusion validity, internal and external validity were discussed in Section 3.4.3 of this chapter. As with most research studies, a number of limitations are present in this study, however all care has been taken to minimise the same.

Firstly, the survey data in this study is comprised of self-report measures. Several procedural strategies were implemented to help reduce the impact of common methods variance, more specifically consistency motif and social desirability, (Podsakoff and Organ, 1986) often associated with self report measures. The procedural strategies included: firstly, placing some of the demographic questions in the middle of the survey to attempt to break any consistency motif (participants attempt to maintain a common logic in their response patterns). The constructs in the study do pertain to personal assessments, and all previous studies investigating this area of research have employed the same self-assessed report measures. Secondly, the quasi-experiment survey was designed to minimise the likelihood of demand effects and reassurance was given to participants, by the independent administrator, that the survey was not related in any way to grades in their subject, and that honest answers were required. Thirdly, it is conceivable that students may not have taken the question surveys

seriously when responding, despite the explanation of the importance of their honesty prior to request to complete. To account for this, each of the surveys included in the final sample were checked individually by two independent persons to ensure any surveys with obvious inconsistencies or invalid responses were not included.

Finally, additional methods of data collection including qualitative measures, for example, focus group feedback could add to the richness of the research findings. The lack of this qualitative data however, provides opportunity to build on the current research in the future. Further discussion about the studies' limitations in general and areas for future research are highlighted in Chapter Five.

3.7 CONCLUSION

This chapter detailed the method used to test the hypotheses presented in Chapter Two. The chapter described a behavioural quasi-experiment capable of falsifying the model. It discussed the design of the experiment, selection of subjects, data collection procedures, methodological limitations, and analysis procedures providing evidence that the correct procedures have been followed. The chapter concludes by tabling the constructs applied to the model including their items. The results of the data analyses will be discussed next in Chapter four.

Table 3.7 List of research constructs including measure items

Previous entrepreneurial experience	
Have you ever held a job where you were paid?	Yes/No
Have your parents ever started their own business?	Yes/No
If yes, how would you rate their experience of starting their own business?	Positive/Negative
Have you worked in your family business?	Yes/No
If yes, how would you rate your experience working in the family business?	Positive/Negative
Do you have a role model involved in their own business? (This could be a friend, relative, neighbour another acquaintance)	Yes/No
If yes, how would you rate how would you rate their impact on your feelings about starting a business?	Positive/Negative

Perceived Desirability of self-employment
I desperately want to work for myself.
The idea of owning my own business is very appealing to me.
I cannot imagine working for someone else.
Working in my own business would be very personally satisfying

Entrepreneurial self-efficacy

I believe I can identify new business opportunities.

I believe I can create ways to improve existing products for a new business.

I believe I can create products or services that fulfil customers' unmet needs.

I believe I can successfully develop a new business.

I believe I can think creatively in business.

I believe I can inspire those I work with to share my business vision.

I believe I can successfully conduct market analysis related to starting a new business.

I believe I can establish and achieve goals and objectives related to a new business venture.

I believe I can formulate a set of actions in pursuit of business opportunities.

I believe I can identify potential new venture funding.

I believe I can identify and build a management team to develop a business.

I believe I can develop business relationships with key people to assist in a business opportunity.

I believe I can tolerate unexpected changes in business conditions.

I believe I can persist in the face of business setbacks.

I believe I can work productively under continuous stress and pressure from work.

If I wanted to, I believe I could successfully start my own business.

Self-employment intention

I am very interested in setting up my own business.

I am working towards owning my own business.

I intend to start my own business within the next two years.

I intend to start my own business within the next five years.

I intend to start my own business within the next ten years.

4. RESULTS

4.1 INTRODUCTION

As stated in previous chapters, the research questions forming the basis for this research are, “Does students’ previous entrepreneurial experience impact students’ perceived desirability for self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions?”, and “Does entrepreneurship education impact students’ self-employment intentions?”

This chapter presents the results of the data analysis from the quasi-experiment described in Chapter Three, and tests the hypotheses stated at the end of that chapter. This chapter proceeds as follows: Section 4.2 presents descriptive statistics for the continuous and non-continuous variables. Section 4.3 reports the results from the t-tests performed to test Hypotheses one and two. Section 4.4 describes the results from the regression analysis used to replicate previous research and test Hypotheses three and four. Section 4.5 reports results of the tests of treatment effects using mixed method analysis of variance (ANOVA) to test Hypotheses five and six. Finally, Section 4.6 concludes the chapter by summarising the results of the hypothesis tests. The analysis was primarily conducted using SPSS for Windows Version 15.0.

4.2 DESCRIPTIVE STATISTICS

The improvement of statistical conclusion validity is possible through the examination of the data prior to analysis for violation of the assumptions underlying multivariate normality, homoscedasticity and linearity (Pallant, 2007). As parametric statistical analyses were used in this research (e.g. t-tests, multiple regression and analysis of variance) the following preliminary analyses were performed. Skewness and kurtosis of the data was investigated to assess the normality of distribution. A correlation matrix was generated to examine the potential threats of multicollinearity and singularity, and linearity was addressed by viewing boxplots and histograms for each of the variables. Tolerance and VIF values were also assessed to rule out the possibility of multicollinearity between the variables. Scatterplots, generated as part of the multiple regression procedure, were examined to test for: a) normality, checking that the residuals were normally distributed about the predicted dependent variable scores, b) linearity, showing a straight line relationship with the predicted dependent variable scores, and c) homoscedasticity, checking that the variance of the residuals about the predicted dependent variables scores were the same for all predicted scores. Mahalanobis, and a comparison of mean and trimmed mean scores were also examined for the presence of outliers. The preliminary data analyses are presented next.

The frequencies and minimum and maximum values of the non-continuous variables, course, semester, sex, and nationality, and previous entrepreneurial experience were investigated and checked against the code-book for errors in relation to their possible range of scores. All scores were within their expected range and no errors were detected in the data. The characteristics of the sample were reported in detail in the method section of the previous chapter. The independent variable previous entrepreneurial experience was

converted into a categorical variable including two groups – students with high previous entrepreneurial experience or students with low previous entrepreneurial experience. In the survey questionnaire previous entrepreneurial experience (PEE) was measured by the sum of the yes-no responses related to quantity and quality of entrepreneurial experience. Total scores ranged from zero to seven and were grouped into two categories – high or low. High being total scores of five and above (n=209), low being total scores of four or less (n=220), including zero. The descriptive statistics output confirmed that the number of students in the subgroups for analysis were roughly equal, a requirement for analyses using (ANOVA) analysis of variance.

Total scores for each of the continuous variables, perceived desirability of self-employment (PDSE), perceived entrepreneurial self-efficacy (PESE), and self-employment intention (SEI), reflected students' personal assessment of their own perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intention both before the intervention (at Time one) and after (at Time two).

The descriptive analysis for the continuous variables is presented in Table 4.1 below.

Table 4.1 Descriptive analysis of individual indicators.

Variable	Trimmed Mean	Mean	S.D.	Skewness	Kurtosis	Histogram	Q-Q Plot
PDSE 1	14.04	13.98	3.421	-0.181	-0.388	✓	✓

PDSE 2	14.26	14.19	3.503	-0.210	-0.508	✓	✓
PESE 1	61.07	61.06	7.754	-0.121	0.855	✓	✓
PESE 2	61.24	61.24	7.761	-0.044	0.471	✓	✓
SEI 1	16.03	15.97	4.721	-0.009	-0.399	✓	✓
SEI 2	16.62	16.51	4.778	-0.234	-0.258	✓	✓

PDSE (Perceived desirability of self-employment) mps=20; PESE (Perceived entrepreneurial self-efficacy) mps=80; SEI (Self-employment intentions) mps=25. T1 and T2.

The frequencies and mean scores of the data were assessed as accurate with the maximum possible scores (mps) for each variable indicated below the table. The 5% trimmed mean values indicate whether or not extreme scores have influenced the mean scores and can be seen not to pose a problem with this data as the values for each variables' mean and trimmed mean were very close. The skewness value provides an indication of the symmetry of the distribution, and the kurtosis value indicates the peakedness of the distribution. Slightly high levels of skewness and/or kurtosis i.e., values above or below zero were present in the data; (zero indicating perfectly normal data is not usually seen in the social sciences, Pallant, 2007). Whilst skewness and kurtosis of the data can result in incorrect estimation of the variance, Tabachnick and Fidell (2007, p.81) state that the risk is reduced with sample sizes over two hundred, and inspection of the shape of distribution through histograms provide more accurate information than other tests of normality (eg. Kolmogorov-Smirnov, Shapiro-Wilk) which can be oversensitive to large samples. Descriptive analysis incorporating results from tests of skewness, kurtosis, and inspection of the histograms and the Q-Q

plots, and given the sample size $n = 421$, supported the evidence of normality of the distribution of scores confirming that transformation of the original data was not necessary.

Scale reliability of the instruments used in this research was tested using SPSS 15.0. All values in the inter-item correlation matrices were positive values, indicating that the items are measuring the same underlying characteristic and confirming the internal consistency of the scales. Cronbach alphas are presented in Table 4.2 below and suggest a strong relationship amongst the items in each scale for each variable at both Time one and Time two.

Table 4.2 Scale Cronbach alphas

Scale	Cronbach alpha	Number of items
Perceived desirability of self-employment T1	0.838	4
Perceived desirability of self-employment T2	0.836	4
Perceived entrepreneurial self-efficacy T1	0.905	16
Perceived entrepreneurial self-efficacy T2	0.899	16
Self-employment intentions T1	0.870	5
Self-employment intentions T2	0.853	5

Scatterplots and correlational information were obtained prior to performing tests of the

research hypotheses to determine the nature of the relationships amongst the variables. Pearson correlation coefficients were used to determine multicollinearity and singularity. Potential threats of multicollinearity, items or variables with correlations of 0.80 and above, and singularity, when one of the variables is redundant with another, were examined (Tabachnick and Fidell, 2007). Investigation of the correlations between the variables confirmed that manipulation of the data was not necessary as correlation coefficients were all less than 0.80, at both Time one and Time two (Tables 4.3 and 4.4 below), falling within the ‘acceptable range’.

Table 4.3 – Time one data

		Correlations			
		TPEE (hi or lo)	avgPDSE1	avgPESE1	avgINTENT1
TPEE (hi or lo)	Pearson Correlation	1	.184**	.222**	.218**
	Sig. (2-tailed)		.000	.000	.000
	N	429	397	392	393
avgPDSE1	Pearson Correlation	.184**	1	.369**	.772**
	Sig. (2-tailed)	.000		.000	.000
	N	397	398	393	394
avgPESE1	Pearson Correlation	.222**	.369**	1	.403**
	Sig. (2-tailed)	.000	.000		.000
	N	392	393	393	389
avgINTENT1	Pearson Correlation	.218**	.772**	.403**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	393	394	389	394

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.4 - Time two data

Correlations

		TPEE (hi or lo)	avgPDSE2	avgPESE2	avgINTENT2
TPEE (hi or lo)	Pearson Correlation	1	.186**	.208**	.213**
	Sig. (2-tailed)		.000	.000	.000
	N	429	426	417	420
avgPDSE2	Pearson Correlation	.186**	1	.428**	.778**
	Sig. (2-tailed)	.000		.000	.000
	N	426	427	418	421
avgPESE2	Pearson Correlation	.208**	.428**	1	.484**
	Sig. (2-tailed)	.000	.000		.000
	N	417	418	418	413
avgINTENT2	Pearson Correlation	.213**	.778**	.484**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	420	421	413	421

** . Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficients were all within a small to moderate range (below 0.61) with the exception of the correlation between perceived desirability of self-employment and self-employment intentions (T1 $r = 0.77$; T2 $r = 0.78$). Despite showing a strong relationship, the correlation between perceived desirability of self-employment and self-employment intentions falls just within the recommended cut-off of 0.80 (Tabachnick and Fidell, 2007). With the data screened and instrumentation validated, the hypotheses were examined next.

4.3 T-TEST RESULTS

Prior to the t-test analyses, the correlational analysis revealed that a small positive relationship existed between level of previous entrepreneurial experience and perceived desirability of self-employment (T1 $r = 0.18$, $n = 429$, $p < 0.0005$; T2 $r = 0.19$, $n = 429$, $p < 0.0005$), and level of previous entrepreneurial experience and perceived entrepreneurial self-efficacy, (T1 $r = 0.22$, $n = 429$, $p < 0.0005$; T2 $r = 0.21$, $n = 429$, $p < 0.0005$).

Two independent-samples t-tests were conducted to compare group mean scores for students with high and low previous entrepreneurial experience in their, a) perceived desirability of self-employment, and b) perceived entrepreneurial self-efficacy. The Levene's test indicated that variances for the two groups (students with high or low previous entrepreneurial experience) were equal, satisfying the assumption of homogeneity of variance. Using the commonly proposed guidelines by Cohen (1988, pp. 284-287) effect size for each is test is calculated through the partial eta squared value (0.01=small; 0.06=moderate; 0.14=large effect).

For perceived desirability of self-employment scores there was a significant difference for students with high previous entrepreneurial experience, (M = 3.6; SD = 0.8) and for students with low previous entrepreneurial experience, (M = 3.3; SD = 0.9); $t(395) = -3.72$, $p = 0.0005$ (2-tailed). The eta squared measure indicates the magnitude of the difference and is calculated below:

Figure 4.1 Eta squared calculation

$$\text{Eta squared} = \frac{t^2}{t^2 + N - 1} = \frac{13.84}{13.84 + 205 - 1} = 0.06$$

The magnitude of the differences in the means (mean difference = -0.32, 95% CI: -0.48 to -0.15) was moderate (eta squared = 0.06) indicating that 6% of the variance in perceived desirability of self-employment can be explained by level of previous entrepreneurial experience.

For perceived entrepreneurial self-efficacy scores there was a significant difference for students with high previous entrepreneurial experience, (M = 3.9; SD = 0.5) and for students with low previous entrepreneurial experience, (M = 3.7; SD = 0.5); $t(395) = -4.49$, $p = 0.0005$ (2-tailed). The eta squared calculation follows:

Figure 4.2 Eta squared calculation

$$\text{Eta squared} = \frac{t^2}{t^2 + N - 1} = \frac{20.16}{20.16 + 207 - 1} = 0.09$$

The magnitude of the differences in the means (mean difference = -0.22, 95% CI: -0.31 to -0.12) was moderate (eta squared = 0.09) indicating that 9% of the variance in perceived entrepreneurial self-efficacy can be explained by level of students' previous entrepreneurial experience.

These results from both the correlational analyses and the t-tests suggest there is a significantly positive relationship between the variables and a difference in the group means, thereby providing support for both Hypothesis 1 and 2 as follow:

Hypothesis 1: Level of student's previous entrepreneurial experience will influence students' perceived desirability of self-employment.

Hypothesis 2: Level of student's previous entrepreneurial experience will influence students' perceived entrepreneurial self-efficacy.

4.4 REGRESSION RESULTS

The third set of analyses used to examine the hypothesised relationships, and replicate previous research, was multiple regression analyses. Examination of the residuals scatterplots, generated as part of the multiple regression procedure, ascertained a) normality, with the residuals normally distributed about the predicted dependent variable scores, b) linearity, with the showing a straight line relationship with the predicted dependent variable scores, and c) homoscedasticity, with the variance of the residuals about the predicted dependent variables scores the same for all predicted scores. The assumptions of multiple regression analysis were also checked to rule out the presence of multicollinearity between the variables. Collinearity statistics indicated a Tolerance value of 0.864, and a VIF value of 1.158 (See Table 4.5 below). Both scores confirm that the multicollinearity assumption was not violated. Presence of outliers was also ruled out through inspection of Scatterplots, Mahalanobis distances and Residuals statistics generated in the multiple regression process.

Table 4.5 – Model Coefficients

Coefficients ^a												
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1												
(Constant)	-.694	.243		-2.855	.005	-1.171	-.216					
avgPDSE1	.812	.038	.721	21.143	.000	.736	.887	.772	.733	.671	.864	1.158
avgESE1	.268	.067	.136	3.997	.000	.136	.400	.403	.199	.127	.864	1.158

a. Dependent Variable: avgINTENT1

Previous correlational analyses, as shown in Tables 4.3 and 4.4, revealed that the Pearson correlation coefficient showed a strong positive relationship existed between perceived desirability of self-employment and self-employment intentions at both time-

one and time-two, (T1 $r = 0.77$, $n = 394$, $p < 0.0005$; T2 $r = 0.78$, $n = 421$, $p < 0.0005$), and a medium positive relationship was found between perceived entrepreneurial self-efficacy and self-employment intentions, (T1 $r = 0.40$, $n = 389$, $p < 0.0005$; T2 $r = 0.48$, $n = 413$, $p < 0.0005$). The regression analysis conducted also supports these relationships and students' perceived desirability of self-employment ($\beta = +0.72$) made the strongest contribution to explaining the dependent variable – self-employment intentions, when the variance explained by students' perceived entrepreneurial self-efficacy ($\beta = +0.136$) was controlled for. Evaluation of the regression output indicated that sixty-one percent of the variance in students' self-employment intentions can be explained by the model and that the model was statistically significant ($p < 0.0005$). See Table 4.6 below.

Table 4.6 – Model Summary and ANOVA

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.782 ^a	.612	.610	.60654

a. Predictors: (Constant), avgESE1, avgPDSE1

b. Dependent Variable: avgINTENT1

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	223.734	2	111.867	304.075	.000 ^a
	Residual	142.006	386	.368		
	Total	365.740	388			

a. Predictors: (Constant), avgESE1, avgPDSE1

b. Dependent Variable: avgINTENT1

Both independent measures were statistically significant, ($p < 0.0005$) and these results

suggest that the model as a whole (including both perceived desirability of self-employment and perceived entrepreneurial self-efficacy is significant [$F(2, 386) = 304.08, p < 0.0005$] supporting Hypotheses 3 and 4 as follow:

Hypothesis 3: Students' perceived desirability of self-employment will influence self-employment intentions.

Hypothesis 4: Students' perceived entrepreneurial self-efficacy will influence self-employment intentions.

4.5 TREATMENT EFFECTS

The third analysis, a mixed method ANOVA including Time one and Time two data, was conducted to evaluate the impact of the intervention, entrepreneurship education, on the independent and dependent variables in the model, perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions. This repeated-measures analysis tested for significant positive differences between the Time one and Time two measures of perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions for students of entrepreneurship - the experiment group, and students of management – the control group, to answer the question: Does the treatment, entrepreneurship education, impact students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions?

At Time one, prior to the treatment, both the control and experiment group were measured on their perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions. The mean scores and standard deviations at Time one and Time two are presented in Tables 4.7 and 4.8 below:

Table 4.7 Time one scores

Variable	Group	Mean	Std. Dev.
Perceived desirability of self-employment (Maximum possible score – 20)	Entrepreneurship	14.20	3.108
	Management	13.78	3.670
Perceived entrepreneurial self-efficacy (Maximum possible score – 80)	Entrepreneurship	61.02	7.650
	Management	61.09	7.862
Self-employment intentions (Maximum possible score – 25)	Entrepreneurship	16.59	4.197
	Management	15.43	5.084

These results confirm the absence of need for concern over possible ceiling effects as at Time one both the control and the experiment groups' mean variable scores are sufficiently below the possible maximum scores for each variable, therefore allowing room for movement, as shown in Table 4.7 above.

Table 4.8 Time two scores

Variable	Group	Mean	Std. Dev.
Perceived desirability of self-employment (Maximum possible score – 20)	Entrepreneurship	14.86	3.177
	Management	13.59	3.672
Perceived entrepreneurial self-efficacy (Maximum possible score – 80)	Entrepreneurship	61.90	7.527
	Management	60.67	7.934
Self-employment intentions (Maximum possible score – 25)	Entrepreneurship	17.72	4.119
	Management	15.45	5.066

For students of entrepreneurship, results showed there was an increase in means of all three measures (perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions) over time; PDES T1=14.20, T2=14.86, PDES mean increase = 0.66; PESE T1=61.02, T2=61.90, PESE mean increase = 0.88; SEI T1=16.59, T2=17.72, SEI mean increase = 1.13.

At Time one, analysis of variance results shown between groups in Table 4.9 below confirmed no statistically significant differences ($p < 0.01$) between the experiment and the control group before the intervention on perceived desirability of self-employment ($p = 0.237$), perceived entrepreneurial self-efficacy ($p = 0.934$), and self-employment intentions ($p = 0.044$). Time two results between groups indicated a significant difference between

entrepreneurship students' and management students' perceived desirability of self-employment ($p = 0.0005$) and self-employment intentions ($p = 0.0005$); however, despite increasing scores in students' entrepreneurial self-efficacy, no significant difference existed between groups PESE scores ($p = 0.126 > 0.05$) after the treatment,

Table 4.9 Mixed method groups ANOVA

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
avgPDSE1	Between Groups	1.024	1	1.024	1.401	.237
	Within Groups	274.025	375	.731		
	Total	275.049	376			
avgPDSE2	Between Groups	9.483	1	9.483	12.748	.000
	Within Groups	278.955	375	.744		
	Total	288.438	376			
avgESE1	Between Groups	.002	1	.002	.007	.934
	Within Groups	88.298	375	.235		
	Total	88.300	376			
avgESE2	Between Groups	.551	1	.551	2.351	.126
	Within Groups	87.908	375	.234		
	Total	88.459	376			
avgINTENT1	Between Groups	3.751	1	3.751	4.104	.044
	Within Groups	342.813	375	.914		
	Total	346.564	376			
avgINTENT2	Between Groups	19.056	1	19.056	22.029	.000
	Within Groups	324.391	375	.865		
	Total	343.447	376			

Analysis of variance results also confirmed a significant main effect for time, Wilks Lambda = 0.948, $F(3, 373) = 6.791$, $p = 0.005$, partial eta squared = 0.52, and a significant interaction between program type and time, Wilks Lambda = 0.949, $F(3, 373) = 6.704$, $p = 0.005$, partial eta squared = 0.51 demonstrating that the treatment had a small to moderate effect as the groups differed significantly. See Table 5.0 below.

Table 4.10 Within and between course effects – Time one to Time two

Multivariate Tests ^b								
Effect			Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Between Subjects	Intercept	Pillai's Trace	.988	10448.717 ^a	3.000	373.000	.000	.988
		Wilks' Lambda	.012	10448.717 ^a	3.000	373.000	.000	.988
		Hotelling's Trace	84.038	10448.717 ^a	3.000	373.000	.000	.988
		Roy's Largest Root	84.038	10448.717 ^a	3.000	373.000	.000	.988
	course	Pillai's Trace	.039	5.019 ^a	3.000	373.000	.002	.039
		Wilks' Lambda	.961	5.019 ^a	3.000	373.000	.002	.039
		Hotelling's Trace	.040	5.019 ^a	3.000	373.000	.002	.039
		Roy's Largest Root	.040	5.019 ^a	3.000	373.000	.002	.039
Within Subjects	time	Pillai's Trace	.052	6.791 ^a	3.000	373.000	.000	.052
		Wilks' Lambda	.948	6.791 ^a	3.000	373.000	.000	.052
		Hotelling's Trace	.055	6.791 ^a	3.000	373.000	.000	.052
		Roy's Largest Root	.055	6.791 ^a	3.000	373.000	.000	.052
	time * course	Pillai's Trace	.051	6.704 ^a	3.000	373.000	.000	.051
		Wilks' Lambda	.949	6.704 ^a	3.000	373.000	.000	.051
		Hotelling's Trace	.054	6.704 ^a	3.000	373.000	.000	.051
		Roy's Largest Root	.054	6.704 ^a	3.000	373.000	.000	.051

a. Exact statistic

b.

Design: Intercept+course

Within Subjects Design: time

These combined results indicate support for Hypothesis 5a and 5c as follow:

Hypothesis 5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.

Hypothesis 5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.

Results, however, suggest there is only partial support for Hypothesis 5b as follows:

Hypothesis 5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.

In addition, Figures 4.3 and 4.4 below provide visual evidence for the support of the positive effect of entrepreneurship education on students' perceived desirability of self-employment and students' self-employment intentions.

Figure 4.3 Perceived desirability of self-employment change T1 to T2 by course

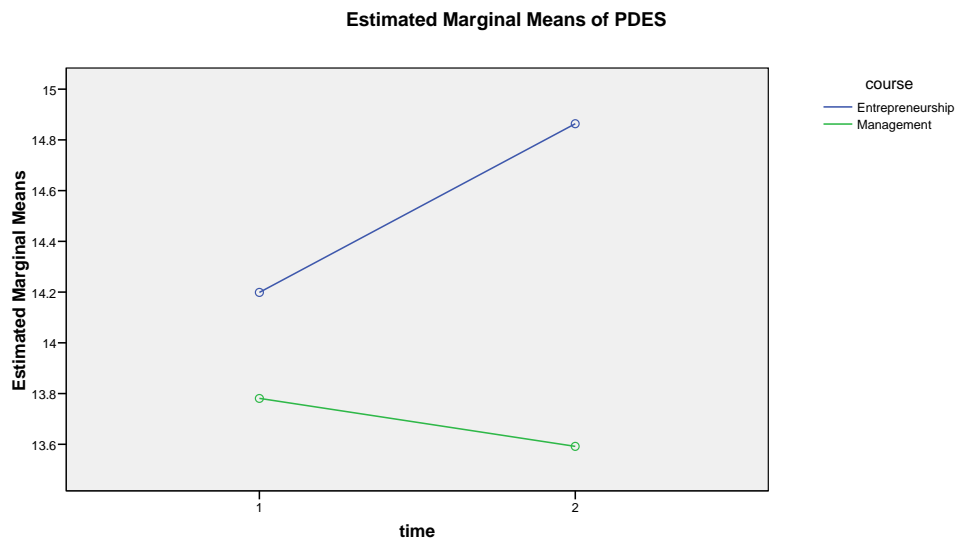
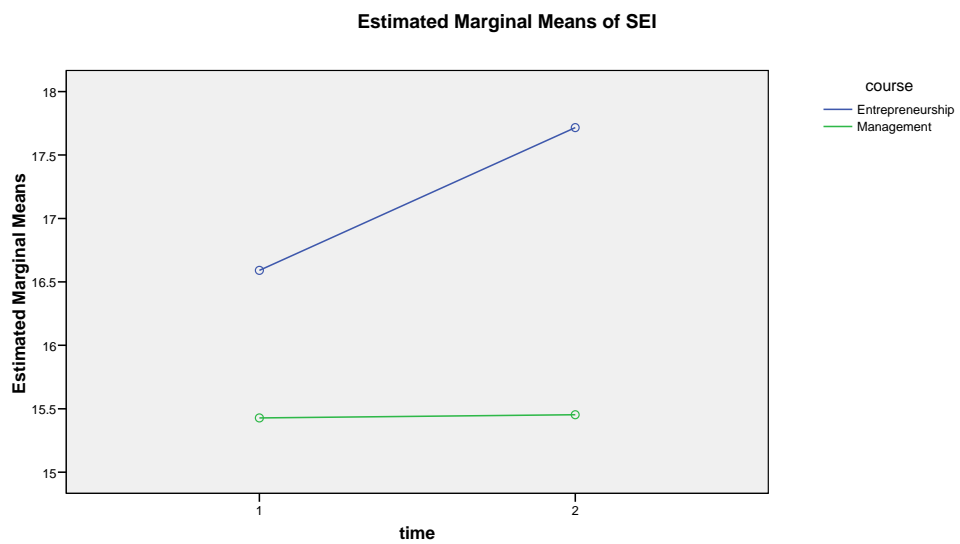


Figure 4.4 Self-employment intentions change T1 to T2 by course



The fourth analysis, mixed method analysis of variance (ANOVA), was conducted to test for significant differences between the Time one and Time two measures of self-employment intentions for students of entrepreneurship with low previous entrepreneurial experience compared with students of entrepreneurship with high previous entrepreneurial experience to answer the question: Which group (students with high or low previous entrepreneurial experience) is impacted most in terms of self-employment intentions following the entrepreneurship education intervention? The final hypothesis is stated below:

Hypothesis 6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.

For the students of entrepreneurship with low previous entrepreneurial experience, results showed there was an increase in SEI scores from Time one ($M = 3.0$, $SD = 0.90$) to Time two ($M = 3.34$; $SD = 0.81$). The mean increase in SEI scores was 0.34. For the students of entrepreneurship with high previous entrepreneurial experience, results showed there was an increase in SEI scores from Time one ($M = 3.43$, $SD = 0.83$) to Time two ($M = 3.67$; $SD = 0.81$). The mean increase in SEI scores was 0.24. See Table 5.1 below.

Table 4.11 Self-employment intentions

Time	Previous entrepreneurial experience (High/Low)	Mean	Std. Deviation

T1	Low	3.00	0.903
T2	Low	3.34	0.811
T1	High	3.43	0.825
T2	High	3.67	0.809

The tests of between-subjects effects showed a statistically significant difference ($p < 0.0005$) between groups with low and high previous entrepreneurial experience in self-employment intentions. The partial eta-squared value is 0.053 indicating a small to moderate effect size; i.e. five percent of the difference in entrepreneurship students' self-employment intention can be explained by level of previous entrepreneurial experience. See Table 5.2 below.

Table 4.12

Tests of Between-Subjects Effects

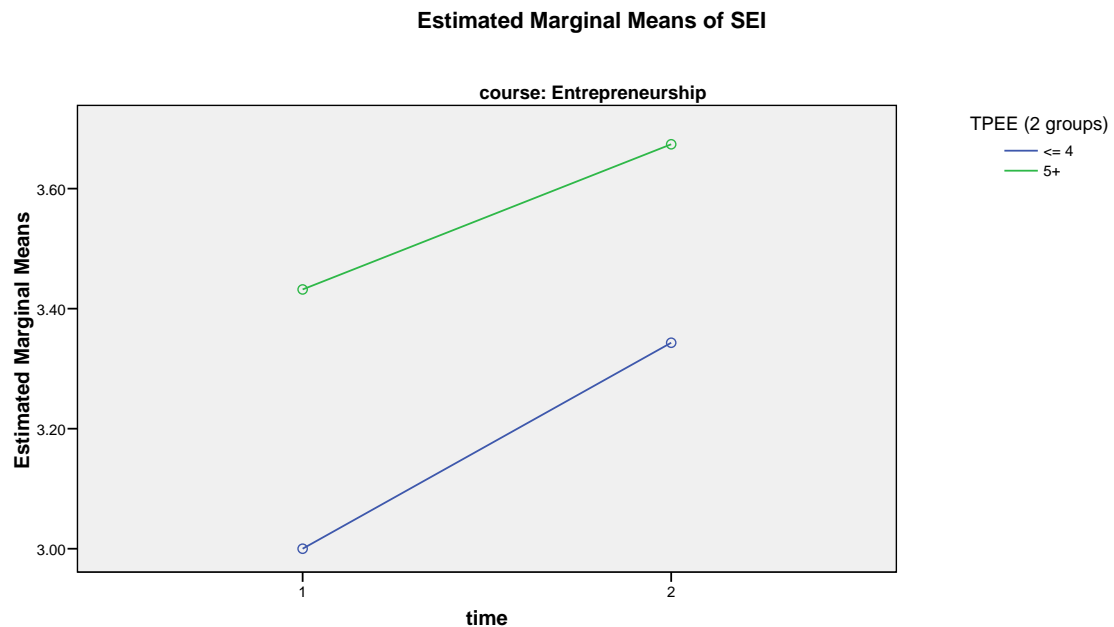
Measure: SEI

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	8013.152	1	8013.152	5118.634	.000	.930
PeeHL	33.558	1	33.558	21.436	.000	.053
Error	599.581	383	1.565			

The plot in Figure 4.5 below provides visual evidence for the support of the increased effect of entrepreneurship education on self-employment intentions for students with low previous entrepreneurial experience compared with students with high entrepreneurial experience.

Fig. 4.5 Self-employment intentions change T1 to T2 by group (high versus low previous entrepreneurial experience)



These results are statistically significant at $p < 0.0005$ (two-tailed), and suggest support for Hypothesis 6b as follows:

Hypothesis 6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.

4.6 SUMMARY OF THE FINDINGS

This chapter presented the analysis of the data collected in the quasi-experiment and tested the hypotheses stated in Chapter Three. Table 5.3 below summarises the results of the

analysis.

Table 4.13 Summary of Hypotheses and major results

Hypotheses	Results
#1: Level of student's previous entrepreneurial experience will influence students' perceived desirability of self-employment.	Supported
#2: Level of student's previous entrepreneurial experience will influence related to students' perceived entrepreneurial self-efficacy.	Supported
#3: Students' perceived desirability of self-employment will influence self-employment intentions.	Supported
#4: Students' perceived entrepreneurial self-efficacy will influence self-employment intentions.	Supported
#5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.	Supported
#5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.	Partially supported

#5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.	Supported
#6: The positive change in self-employment intentions between Time one and Time two will be greater for students of entrepreneurship with low previous entrepreneurial experience than students of entrepreneurship with high previous entrepreneurial experience.	Supported

The results provide good support for the positive impact of entrepreneurship education on students' entrepreneurial intentions. Tests of Hypotheses 1 and 2 were supported confirming that previous entrepreneurial experience increases students' desirability for self-employment and students' perceived entrepreneurial self-efficacy (their belief in their ability to be self-employed). Hypotheses 3 and 4 replicated previous research and provided further support for the inclusion of the antecedents perceived desirability of self-employment and perceived entrepreneurial self-efficacy in behavioural self-employment intentions models. Hypotheses 5a, 5b, and 5c, focused on the impact of the treatment, a fourteen week entrepreneurship course on the self-employment intentions model. All hypotheses were supported at the within-persons level, however Hypothesis 5b was not supported at the between-groups level, indicating that students' entrepreneurial self-efficacy was not significantly different for the control and the experiment group. Finally, hypothesis 6 was supported indicating that students with low previous entrepreneurial experience showed a larger increase in self-employment intention than students with high previous entrepreneurial experience following

participation in the entrepreneurship course.

These results confirm the importance of entrepreneurial training to enhance both the desirability and feasibility of self-employment as a career option. Entrepreneurial training may occur in the form of work experience within the family business, part-time work experience, and/or university business education. As previous empirical evidence has confirmed, entrepreneurial intentions are preceded by both personal desirability for self-employment, and personal belief in one's ability to be self-employed. Results of this study showed that participation in entrepreneurship education successfully increased students' desire for self-employment and belief in their ability to be self-employed (entrepreneurial self-efficacy). In comparison, participation in the management course did not increase students' desire for self-employment, however, did increase their belief in their ability to be self-employed. This indicates that students' entrepreneurial self-efficacy can be enhanced through additional forms of business tuition other than those specifically providing entrepreneurial training.

Given the results of the hypothesis tests, it is concluded that the model proposed in Chapter Two has withstood falsification. Chapter Five continues with the analysis and discussion of these results, and Chapter Six presents the conclusions derived from the abovementioned findings.

5. ANALYSIS, DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

This chapter concludes the thesis and provides an analysis of the research findings including the implications and conclusions of the research relevant to the research hypotheses presented in Chapter Four. The findings of the hypotheses are summarised with relevant discussion about each of the observed relationships. The chapter proceeds as follows. Section 5.2 summarises the research project and Section 5.3 provides an analysis and summary of the results. Section 5.4 considers the implications of the research and Section 5.5 discusses the limitations of the research and suggestions for future research. Section 5.6 summarises the chapter and concludes the thesis.

5.2 SUMMARY OF THE RESEARCH

In the previous chapter, the data were analysed to test the research hypotheses derived from two general research directives. The overriding questions were as follows:

“Does entrepreneurship education impact students’ self-employment intentions?”, and

“Does students’ previous entrepreneurial experience impact students’ perceived desirability for self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions?”

More specifically, the current research examined the associations of participation in a fourteen week entrepreneurship subject, and of students’ previous

entrepreneurial experience, with students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and students' self-employment intentions. To succinctly recap, a review of the relevant literature suggested that entrepreneurship education, and previous entrepreneurial experience might be important contributors to the formation of entrepreneurial intentions through an individuals' desirability and feasibility of entrepreneurship (Shapero and Sokol, 1982; Krueger and Carsrud, 1993; Fayolle and Degeorge, 2006). In combination, desirability of a behaviour (attitude toward a behaviour), and feasibility of a behaviour (beliefs about the ability to perform a specific behaviour) lead to the formation of a behavioural intention (Ajzen, 2006).

Entrepreneurial intention is defined in this thesis as the aspiration to be self-employed. The importance of intention as an antecedent to a planned behaviour has received attention in the entrepreneurship literature given that the act of self-employment is intentional by nature. It has been shown that both perceived desirability of entrepreneurship (attitude toward self-employment), and perceived behavioural control (entrepreneurial self-efficacy), positively influence self-employment intention and the likelihood of future entrepreneurial action (Kolvereid, 1996; Krueger et al., 2000).

A research model was developed by Krueger et al. (2000) and has been further enhanced in this thesis to test additional antecedents to self-employment intention; the additional antecedents being previous entrepreneurial experience and participation in a fourteen-week entrepreneurship education subject. Self-reported data collected from four hundred and ninety-five undergraduate students in a quasi-experimental setting at an Australian university

were used to test the hypotheses and examine students' subjective perceptions of their self-employment intentions.

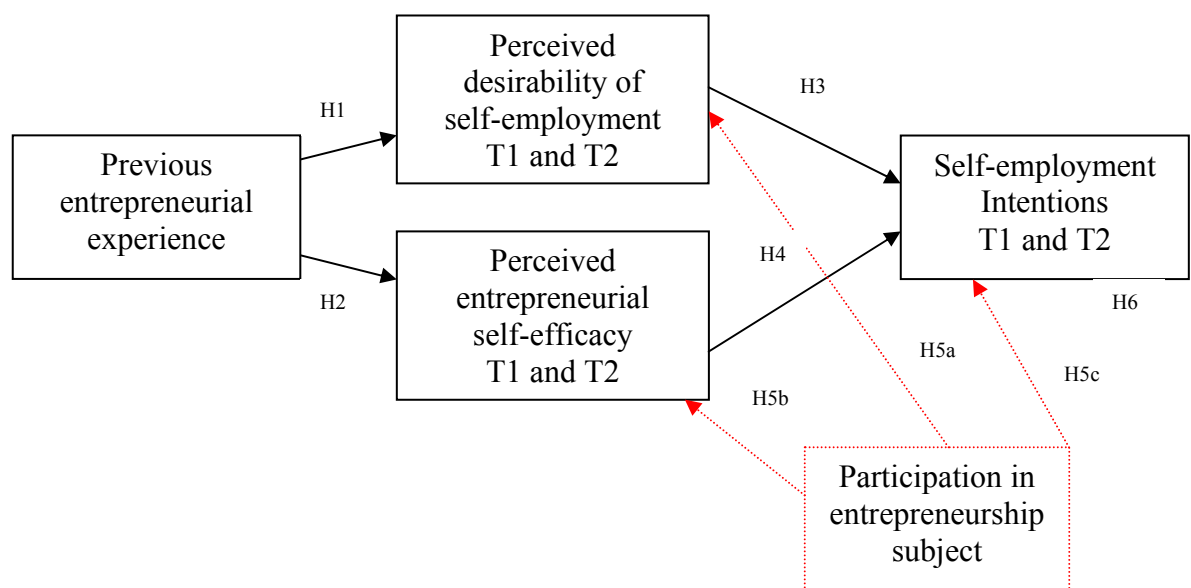
The findings of this thesis contribute to the entrepreneurial intentions literature. Firstly, there is a paucity of research in the entrepreneurship domain that has empirically tested the cognitive impact of entrepreneurship education employing a quasi-experimental method. This thesis addresses that issue, and additionally replicates previous findings from the psychological literature relating to the cognitive processes of behavioural intentions. Secondly, support was found for the revised entrepreneurial intentions model, incorporating students' previous entrepreneurial experience as an antecedent to students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions, and participation in an entrepreneurship subject as a 'trigger' event. Thirdly, the examination of individuals' perceptual differences and changes were assessed at both the within and between levels across a fourteen week time period. An analysis of the results follows.

5.3 ANALYSIS AND SUMMARY OF RESULTS

The first set of hypotheses relate to students' previous entrepreneurial experience. Hypotheses one and two look at the relationship between this previous experience and the antecedents to self-employment intentions – perceived desirability of self-employment and perceived entrepreneurial self-efficacy and are discussed further in Section 5.3.1. The second set of hypotheses, Hypotheses three and four, replicate previous research and examine the relationship between perceived desirability of self-employment, perceived entrepreneurial

self-efficacy and self-employment intentions and are discussed in Section 5.3.2. Results from the third set of hypotheses are discussed in Section 5.3.3, and evaluate the impact of the intervention, entrepreneurship education, on perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions. Finally, results from hypothesis six are discussed in Section 5.3.4 comparing the self-employment intentions for students of entrepreneurship with ‘low’ previous entrepreneurial experience to students of entrepreneurship with ‘high’ previous entrepreneurial experience. All of the hypothesised relationships in this research are discussed in turn including analysis of the results explained within the context of the previous research discussed in the literature review in Chapter two. The research model is shown below:

Figure 5.1 Complete Modified Intentions Model



5.3.1 HYPOTHESES 1 AND 2: PREVIOUS ENTREPRENEURIAL EXPERIENCE INFLUENCES PERCEIVED DESIRABILITY OF SELF-EMPLOYMENT AND PERCEIVED ENTREPRENEURIAL SELF-EFFICACY.

Both hypotheses one and two were supported, with students' perceived desirability of self-employment scores, and students' perceived entrepreneurial self-efficacy scores, significantly different in the group with 'high' previous entrepreneurial experience compared with the group with 'low' previous entrepreneurial experience. Specifically, the higher a student's level of previous entrepreneurial experience, the more likely the student is to be attracted to self-employment, and the more likely the student is to believe he or she would be capable of self-employment. These hypotheses were derived from the psychological literature and the supported relationships are consistent with Ajzen's Theory of Planned Behaviour (1991) and Bandura's Social Cognitive Theory (1986). Ajzen's Theory of Planned Behaviour (1991) shows attitudes to be a result of beliefs developed by evaluating past experiences. Perceived desirability of self-employment is an attitudinal construct and it follows that a positive belief in self-employment formed through previous entrepreneurial experience would positively impact desirability of self-employment. Accordingly, in this thesis, previous entrepreneurial experience was shown to be positively related to perceived desirability of employment.

From a social learning perspective (Bandura, 1986), occupational role models and previous experience are important environmental factors in the development of an individuals' self-efficacy and career selection process. Accordingly, in this thesis, previous entrepreneurial experience has been shown to impact entrepreneurial self-efficacy given the opportunities provided for role-modelling and learning-through-doing (enactive mastery). Results suggest

that the development of first-time entrepreneurs can be encouraged through the provision of opportunities to increase both attitude towards self-employment and belief in one's ability to be self-employed. Such opportunities for entrepreneurial learning may come from both tertiary education and/or previous business experience in the form of employed work, work within the family business, or observation of role-models. A positive entrepreneurial work experience provides entrepreneurial skills and knowledge and enables an individual to learn from that experience (enactive mastery) and learn from entrepreneurial mentors (role models).

Shapero's (1982) Entrepreneurial Event model depicts an individual's perception of desirability of entrepreneurship and perception of feasibility of entrepreneurship (entrepreneurial self-efficacy) as antecedents to entrepreneurial intention. Perceptions of desirability are expressed through an individual's personal value systems and are additionally impacted by social and cultural factors. Perceived desirability of entrepreneurship is indicative of an individual's attraction to, or interest in, starting their own business (i.e. their attitude towards self-employment). Perceptions of feasibility are related to an individual's perception of available resources (eg. human, social, physical, and financial capital).

Shapero's (1982) thesis, and Van Praag and Van Ophem (1995) suggested that willingness and presence of an opportunity are both necessary conditions for self-employment to occur. Willingness was defined as motivation, and opportunity defined as entrepreneurial ability, and both were found to be enhanced through experience gained in entrepreneurship. In addition, McMullen and Shepherd (2006) agreed that belief in the ability to pursue entrepreneurial action (entrepreneurial self-efficacy) is a function of

entrepreneurial knowledge. Furthermore, past research has suggested that work experience is influential in one's interest in an entrepreneurial career (Matthews and Moser, 1995; Scott and Twomey, 1988) and, consistent with these findings, in this thesis, previous entrepreneurial experience was shown to have a direct effect on students' desirability of self-employment and students' belief in their ability to be self-employed (perceived entrepreneurial self-efficacy), both antecedents to the intention to be self-employed.

The construct 'previous entrepreneurial experience' was grouped into two levels – 'high' or 'low' previous entrepreneurial experience. Krueger (1993) recommended that measures of prior exposure to entrepreneurship consider both quantity and positiveness of that experience, and in accordance with that, 'previous entrepreneurial experience' was measured by the sum of the yes responses related to quantity and positiveness of experience attained through (a) entrepreneurial role models; (b) participation in family business; and (c) employed work experience. Providing further support for this measure, Matlay (2006) agreed that graduates' family and peer influences can affect entrepreneurial motivation and career aspirations in either a positive or a negative way.

To choose self-employment as a career option it is necessary that an individual possesses both the desirability of self-employment and the self-belief in one's ability to be self-employed. An individual's desirability of self-employment and entrepreneurial self-efficacy is enhanced by previous entrepreneurial experiences. Furthermore, lower barriers to entry exist for the younger generations of family businesses through the opportunity they have to capitalise on entrepreneurial family networks (Greve and Salaff, 2003). Past research has shown that individuals who have family members and/or close friends who are

entrepreneurs are more likely to start their own business than those who have not experienced the same level of exposure to entrepreneurship (Collins and Moore, 1970; Cooper and Dunkelberg, 1984).

An individual needs to see the act of self-employment as desirable before it is likely self-employment intentions will be formed. Students with a 'high' level of previous entrepreneurial experience were shown to have a positive attitude toward self-employment, and a belief in their ability to pursue self-employment. Specifically, it was found that students with a higher level of previous positive entrepreneurial experience, possessed both a higher desirability of self-employment and higher entrepreneurial self-efficacy than those students with a lower level of previous entrepreneurial experience. Following graduation, it is possible that these networked students with higher levels of previous entrepreneurial experience may have access to, and more easily attain, support and assistance in new venture creation than those students with a 'low' level of previous entrepreneurial experience.

5.3.2 HYPOTHESIS 3 AND 4: PERCEIVED DESIRABILITY OF SELF-EMPLOYMENT AND PERCEIVED ENTREPRENEURIAL SELF-EFFICACY INFLUENCES SELF-EMPLOYMENT INTENTIONS.

In testing the model in this thesis, and replicating past research, both students' perceived desirability of self-employment and perceived entrepreneurial self-efficacy predicted self-employment intentions, supporting both Hypothesis three and four. In other words, students who perceived self-employment as a desirable career option formed stronger self-employment intentions than those students who did not perceive self-employment as a desirable career option. In addition, a student who believes he or she would be

capable of self-employment is likely to form an intention to be self-employed, providing self-employment is a desirable career option. Accordingly, results in this thesis showed that perceived desirability of self-employment made the strongest contribution to explaining students' self-employment intentions, when the variance explained by students' perceived entrepreneurial self-efficacy was controlled for in the experiment.

Ajzen (2001) posited that the more favourable an individual's attitude toward a behaviour, the higher the probability of intent to perform that behaviour. Shapero's (1982) SEE model included an evaluative measure of attitude being the desirability of performing the behaviour required to start a new entrepreneurial venture. In this thesis, desirability of self-employment is the measure of a persons' attitude toward self-employment (a necessary condition of entrepreneurship). Empirical support for the relational link between attitudes and intentions is strong (Ajzen, 1985; Kim and Hunter, 1993); and previous studies have confirmed the appropriateness of the application of behavioural intentions models in entrepreneurship research (Krueger and Carsrud, 1993; Davidsson, 1995; Krueger et al., 2000).

In this thesis, desirability of self-employment is determined by a student's beliefs and perceptions about self-employment and by their personal attitude towards the idea of starting their own business. Beliefs and perceptions are formed by exogenous factors (Krueger et al., 2000) such as informational cues from one's environment (e.g. previous experiences, education, role models). From these informational cues students could either form a favourable or unfavourable attitude toward self-employment (Ajzen and Fishbein, 1980).

It follows that students with a strong favourable attitude toward self-employment would be more likely to develop strong self-employment intentions compared to students with unfavourable attitudes towards self-employment. The model developed and supported in this thesis suggests that two exogenous factors responsible for influencing both perceived desirability of self-employment and perceived entrepreneurial self-efficacy include previous entrepreneurial experience and participation in entrepreneurship education. Previous research (Ajzen, 1987; Krueger and Carsrud, 1993) confirms that such exogenous factors either moderate the intentions-behaviour relationship, or indirectly affect intentions through attitudes, beliefs and perceptions. It was not within the scope of this thesis to test the intentions-behaviour relationship, however it can be said that previous entrepreneurial experience and entrepreneurship education indirectly affect intentions through perceived desirability of self-employment and perceived entrepreneurial self-efficacy.

As discussed in detail in the literature review in chapter two, the concepts of 'perceived feasibility' in Shapero's (1982) SEE model and 'perceived behavioural control' in Ajzen's (1991) Theory of Planned Behaviour are interchangeable with the construct self-efficacy given that all three variables assess one's perceived belief in their ability to perform a specific behaviour. Self-efficacy is a motivational construct (Gist and Mitchell, 1992) and influences one's choices, efforts, emotive reactions and goals. Previous research has shown that self-efficacy predicts career choice (Lent et al., 1994) and entrepreneurial opportunity recognition (Krueger, 1989).

Bandura (1977) suggested self-efficacy to be a more reliable research construct when made task specific; consequently in this thesis, entrepreneurial self-efficacy was the

preferable variable of choice in the behavioural intentions model testing the intent to perform entrepreneurial behaviour. Entrepreneurial self-efficacy, in this thesis, is defined as the degree to which students believe they would be capable of being self-employed. Efficacy beliefs, like attitudes, can also be developed and strengthened through informational cues from one's environment (e.g. previous experiences, education, role models). Entrepreneurial self-efficacy is developed by assessment of internal and external information cues; external being availability of resources (human, social, physical and financial) and internal - referring to an individual's perception of their own ability and task-specific knowledge. The model developed in this thesis presents previous entrepreneurial experience and entrepreneurship education as the exogenous factors indirectly impacting self-employment intentions.

This study supported the predicted relationships between perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions. Hypotheses five a, b and c test the impact of entrepreneurship education on the antecedents of entrepreneurial behaviour and are discussed next.

5.3.3 HYPOTHESIS 5A, 5B AND 5C: PARTICIPATION IN ENTREPRENEURSHIP EDUCATION POSITIVELY IMPACTS PERCEIVED DESIRABILITY OF SELF-EMPLOYMENT, PERCEIVED ENTREPRENEURIAL SELF-EFFICACY AND SELF-EMPLOYMENT INTENTIONS.

Worldwide, universities offer entrepreneurship subjects, (some majors), alongside the more traditional business management subjects, and yet there have been few empirical tests on the effects of these entrepreneurship subjects/programs on career intentions (Dyer, 1994, Fayolle and Klandt, 2006). Career theory (Sonnenfeld and Kotter, 1982) suggests that individuals should choose careers that match their personality; however given that we

know personality traits are primarily static, cannot be changed through education, and offer weak support in their relationship with job choice (Kolvereid and Moen, 1997), the investigation of cognitive changes relating to students' intentions to be self-employed further to participation in an entrepreneurship subject were tested in this thesis in Hypotheses 5, a, b, and c as follows:

Hypothesis 5a: Students' participation in entrepreneurship education will positively impact perceived desirability of self-employment.

Hypothesis 5b: Students' participation in entrepreneurship education will positively impact perceived entrepreneurial self-efficacy.

Hypothesis 5c: Students' participation in entrepreneurship education will positively impact self-employment intentions.

Within-subjects tests showed that self-employment desirability perceptions were higher at post-test than pre-test for the experiment group, whereas for the control group, desirability of self-employment perceptions were unchanged, indicating that perceived desirability of self-employment was only increased through participation in the fourteen week entrepreneurship subject and not through participation in the strategic management subject. Specifically strategic management students' attitudes towards self-employment did not change between time one and time two, whereas entrepreneurship students' positive attitude towards self-employment did increase. The same was found to be true regarding students' self-employment intentions. Self-employment intentions were higher at post-test than pre-test for the experiment group, whereas for the control group, self-employment intentions were

unchanged, indicating that the intention to seek self-employment was only increased through participation in the fourteen week entrepreneurship subject and not through participation in the strategic management subject. Specifically strategic management students' self-employment intentions did not change between time one and time two, whereas entrepreneurship students' self-employment intentions did increase.

Possible speculation for these results may be that in addition to the following components in the strategic management course - business management, strategy formation, marketing, human resources, operations and financial analysis tuition, the entrepreneurship subject includes components in creativity, opportunity recognition and opportunity evaluation (focussing on the new start-up venture). The objective of the treatment (the fourteen week entrepreneurship subject) is primarily to raise students' awareness of new venture creation and the formation of entrepreneurial ventures, to encourage creativity and opportunity recognition, as well as provide a framework and the necessary skills to assist in opportunity evaluation and implementation. This skill-set is useful in both employment and self-employment conditions, and it is not the single objective of the subject to encourage self-employment as a career choice.

Guest entrepreneurs present in some of the lectures detailing both the highs and the lows of their entrepreneurial careers and students are encouraged to ask questions in the process. Whilst it is a worthwhile goal to encourage new venture creation, it is important that students are made aware of the downside and provided with the skills to assist in risk management, thereby increasing the quality of new start-ups. As a result of participation in the

entrepreneurship subject, it is clear that students' attitudes towards self-employment and self-employment intentions were positively impacted.

While Hypotheses five a, b and c were supported, Hypothesis five b was only partially supported. Entrepreneurial self-efficacy perceptions were higher at post-test than pre-test for both the experiment and the control group, indicating that entrepreneurial self-efficacy can be equally increased through participation in either the fourteen week entrepreneurship subject or the fourteen week strategic management subject at the Australian university where the data were collected. This is not surprising given that the strategic management subject is a business subject including components in business management, strategy formation, marketing, human resources, operations and financial analysis. It is reasonable and likely that students' belief in their ability to be self-employed and business knowledge would be increased through participation in either of these business subjects, entrepreneurship or strategic management.

Past research has shown that the self-employed are more likely to have a university education than their employed counterparts (Franke and Luthje, 2004; Robinson and Sexton, 1994) and, only in more recent years, has promotion of self-employment been regarded as an important task of universities. Results indicate that self-employment intentions can be enhanced through participation in entrepreneurship education and it can be concluded that a fourteen week entrepreneurship subject such as the one used as the treatment in this thesis does foster entrepreneurship. Past studies have shown that entrepreneurship education encourages graduates to seek self-employment (Clark et al., 1984; Gorman et al. 1997), however a large

portion of these studies were exploratory and did not include control groups or repeated measures designs.

In summary of these results for Hypotheses 5a, b, and c; participation in entrepreneurship education increased students' perceptions of desirability of self-employment and perceptions of entrepreneurial self-efficacy, leading to students' increased self-employment intentions. In addition, participation in the strategic management subject increased students' perceived entrepreneurial self-efficacy, however did not increase perceived desirability of self-employment, and in turn did not increase students' self-employment intentions. This stands to reason as we know that to form self-employment intent (to intend to choose self-employment as a career option) it is necessary that an individual also possesses the desirability of self-employment. We also know that university students are at a stage in their life cycle when the process of making career-related decisions is imminent (Harvey and Evans, 1995) and therefore make an appropriate target market for entrepreneurship education.

5.3.4 HYPOTHESIS 6: ENTREPRENEURSHIP EDUCATION HAS A GREATER IMPACT ON THE SELF-EMPLOYMENT INTENTIONS OF STUDENTS WITH 'LOW' PREVIOUS ENTREPRENEURIAL EXPERIENCE THAN ON STUDENTS WITH 'HIGH' PREVIOUS ENTREPRENEURIAL EXPERIENCE.

The tests of between-subjects effects showed a statistically significant difference between groups with 'low' and 'high' previous entrepreneurial experience in self-employment intentions providing support for Hypothesis six. Specifically, students in the entrepreneurship subject with 'low' previous entrepreneurial experience had a greater intention to be self-

employed at time two than those students with 'high' previous entrepreneurial experience.

Possible speculation is, that prior to participation in the fourteen week entrepreneurship subject, students with 'low' or no previous entrepreneurial experience were not exposed to as much positive business experience in the form of participation in the family business, observation of role-models, or employed work experience and therefore the prior lack of opportunity for entrepreneurial learning made the components of the entrepreneurship subject highly motivational. Given the reduced 'low' level of prior entrepreneurial experience, these students may not have had the benefit of the opportunity to develop entrepreneurial self-efficacy through positive experiences in enactive mastery and role-model mentoring, or alternatively, negative experiences may have negatively affected their initial desirability for self-employment prior to participation in the entrepreneurship subject.

Activities in the entrepreneurship subject that may have compensated for the lack of previous entrepreneurial experience, or negative entrepreneurial experience, included the use of instructors and guest speakers as positive role-models, the encouragement to creatively seek opportunities, and the establishment of a framework for opportunity evaluation. According to Bandura (1977), role-modelling provides the opportunity for the observer/learner to learn by example as opposed to learning through direct experience. Results suggest that entrepreneurship education may be a suitable proxy for previous business experience in students' intention to be self-employed.

5.4 MANAGERIAL IMPLICATIONS OF THE RESEARCH

The primary purpose of this study was to understand more about an individual's self-employment intentions, thereby developing a model that linked entrepreneurship education, amongst other factors, to the formation of such behavioural intentions. Given the potential to explain future entrepreneurial behaviour through behavioural intentions models (Ajzen, 1991; Krueger et al., 2000), understanding the impact of entrepreneurship education through changes in students' attitudes towards self-employment and entrepreneurial self-efficacy is of importance to vocational educators, and public policy makers. It is felt that some components of entrepreneurship can be taught (Drucker, 1985) and this thesis provides the basis for further studies to understand more about the affects of entrepreneurship teachings on participants' entrepreneurial intentions. As stated previously, education about entrepreneurship is important, and is outside traditional discipline boundaries (Charney and Libecap, 2000) providing an opportunity for innovation in pedagogy. Given the worldwide growth in the range of entrepreneurship program offerings, understanding more about the individual impact of such programs provides opportunities to both enhance programs to suit the specific needs of different target markets, and to create complementary programs to increase the range offered. For example some programs are primarily aimed at teaching students the basics of launching a business or business planning, whilst others have the broader aim of teaching the essence of entrepreneurship, and students of the latter programs may even consider a career path in academia. Whatever the program objectives, assessing their impact on participants' career intentions is additionally important to public policy makers.

Understanding how self-employment intentions are formed may provide opportunities to stimulate growth in the economy through new business creation initiatives. A significant implication of the thesis is that by knowing how self-employment intentions are formed it may be possible to influence the process to encourage entrepreneurial behaviour. Given that the results suggest that previous entrepreneurial experience and entrepreneurship education positively affect both perceived desirability of self-employment and entrepreneurial self-efficacy potential entrepreneurs could be assisted through: a) the establishment of mentor programs with successful entrepreneurs; b) increased availability of incubator assistance; and c) entrepreneurship training programs for specific target markets. The theoretical implications of this research are considered next.

5.5 THEORETICAL IMPLICATIONS OF THE RESEARCH

Similar to prior research that investigated entrepreneurial intentions in a general sense (Krueger and Carsrud, 1993; Krueger et al., 2000), the findings of this thesis support the positive associations between self-employment intentions and attitudes towards self-employment and the feasibility of self-employment in line with more recent research by Kolvereid and Isaksen (2006). The sample in their study consisted of owners of newly registered Norwegian businesses (i.e. individuals who were currently self-employed). To learn more about entrepreneurship, it is not sufficient to study actions in hindsight alone; we also need knowledge about the processes would-be-entrepreneurs go through on their way to the selection of self-employment as a career choice.

The findings in this thesis suggest that perceived desirability of self-employment and

entrepreneurial self-efficacy are both useful for research into general perceptions of self-employment and more specifically self-employment intentions. Results of this study may also provide additional insight into the benefits of entrepreneurship education to encourage both increased desirability of self-employment and feasibility of self-employment. In addition, the current study provided empirical support for the relationship between quantity and quality of previous entrepreneurial experience and desirability of self-employment and feasibility of self-employment.

In addition, this thesis provides further support for use of Ajzen's Theory of Planned Behaviour (1991), Shapero's Entrepreneurial Event thesis (1982) and Bandura's Social Cognitive Theory (1986) as the basis for an entrepreneurial intentions model to test the antecedents to self-employment intention.

In summary, the findings imply that both previous entrepreneurial experience and participation in entrepreneurship education can have a positive impact on an individuals' intention to be self-employed. In the revised model, the formations of self-employment intentions are positively associated with both the preference for a career in self-employment based on both an individuals' desirability of self-employment and entrepreneurial self-belief measures. These desirability and self-belief measures have been shown to be affected by an individual's previous family business experience, work experience, observation of and mentoring by role-models, and participation in a fourteen week entrepreneurship subject taught by instructors possessing previous 'real world' business experience.

5.6 LIMITATIONS AND FUTURE RESEARCH

One limitation of this thesis is the use of self-report measures only. Despite some of the constructs being conceptualised as self-reports (e.g. perceived entrepreneurial self-efficacy) future research might include other useful data sources such as students' performance on an objective written test to assess their actual learning through participation in the entrepreneurship subject, or students' actual class grades. Convenience considerations did not pose a limitation, as it made good sense to study business students who were receiving entrepreneurship education and are at the stage of considering career choice and post-degree intentions.

Secondly, this thesis has focussed on the prediction of entrepreneurial intentions, not realisation of these intentions. Future longitudinal research is recommended, however in defence of this limitation, the connection between behavioural intention and subsequent behaviour has been theoretically established and well supported by extensive empirical research (Ajzen, 1991; Kim and Hunter, 1993). Self-employment is widely viewed as an intentional behaviour (Bird, 1988; Kolvereid, 2006) and it is necessary and important to understand the factors that precede this intention to both encourage the emergence of young entrepreneurs, and to enhance current entrepreneurship programs.

Intentions-based models in past research have also examined the intent, but not the timing, of entrepreneurial behaviour (Krueger, Reilly and Carsrud, 2000). Even following choice of self-employment as a career choice an opportunity may not be identified in the short-term. Even so, intention-based models maintain that the act of self-employment must be preceded

by the development of self-employment intention (Shook et al. 2003) and through a better understanding of such intentions we can better predict future entrepreneurial behaviour. A primary goal of future research should be to observe the link between self-employment intentions and the occurrence of actual self-employment. Longitudinal research that seeks to explore the follow through rates of those intending to be entrepreneurs, and/or who succeeds as an entrepreneur is an interesting direction for future research.

Thirdly, the fourteen week entrepreneurship education subject was assessed as a whole, and a detailed assessment of the individual components of content, design and delivery was beyond the scope of this thesis. Future research is recommended to fully evaluate the effectiveness of each of the subject's components in relation to their impact on students' perceived desirability of self-employment, perceived entrepreneurial self-efficacy and self-employment intentions.

Finally, this thesis has a limitation regarding generalisation as entrepreneurship subjects across different institutions are diversified and heterogeneous, including different audiences, a range of different instructor profiles, and variety in content, methods and pedagogical approaches. In defence of this limitation, as stated earlier, it is proposed that this thesis provides a framework for assessing the impact of specific entrepreneurship subjects or programs. This framework would be useful to assess the individual components of any entrepreneurship subject or program in detail. The evaluation of such education programs is important to the widespread development of entrepreneurship across institutions and to the development of entrepreneurship in society.

5.7 CHAPTER SUMMARY

In conclusion, this research addresses a gap in the literature by examining the impact of entrepreneurship education and previous entrepreneurial experience on students' self-employment intentions. The findings indicate the importance of education both formal and informal in the development of entrepreneurial intentions. Data collected prior to students' participation in either the entrepreneurship or the strategic management subject confirmed that previous entrepreneurial experience affected both perceptions of desirability of self-employment and perceptions of entrepreneurial self-efficacy (both antecedents to self-employment intentions).

Students in both the experiment and the control groups revealed no significant differences at pre-test in their perceptions of desirability of self-employment, perceptions of entrepreneurial self-efficacy, and self-employment intentions. At post-test, results indicated that entrepreneurship students' perceptions of desirability of self-employment, perceptions of entrepreneurial self-efficacy, and self-employment intentions had increased. In contrast, at post-test, results indicated that students of strategic management experienced an increase in perceptions of entrepreneurial self-efficacy with no change to either perceptions of desirability of self-employment, or self-employment intentions.

These results strongly suggest that participation in entrepreneurship education positively influences students' perceptions of self-employment and hence, self-employment intentions. Whilst it would be incorrect to attribute the significant difference in students' self-

employment intentions across the experiment and the control group solely to the intervention, it is plausible that participation in the fourteen week entrepreneurship subject did “trigger” students’ self-employment intentions.

This quasi-experimental research has shown that exposure to entrepreneurship education has a positive affect on students’ self-employment intentions confirming that through entrepreneurship subjects and majors, universities are in a position to shape and foster entrepreneurial intentions. The content of entrepreneurship courses differs from university to university worldwide, and by using a cognitive approach to evaluation, researchers can measure the impact of individual entrepreneurship subjects from the perspective of the student, through measurement of attitudes towards self-employment and perceptions of entrepreneurial self-efficacy, to determine the effectiveness of a specific entrepreneurship course. As students with ‘low’ levels of previous entrepreneurial experience showed the greater increase in self-employment intentions, in the process of course development, providers of entrepreneurship education should consider the different needs of individuals with differing levels of previous entrepreneurial experience. Furthermore, additional research is required to determine if participation in entrepreneurship education results in long-term changes in self-employment intentions.

Finally, this experimental research was conducted in Australia and contributes to the literature by demonstrating the robustness of the behavioural intent models approach to the investigation of entrepreneurial intention in a different cultural environment to those already tested in past research undertaken in the United States of America and Europe. In conclusion, this research provides a contribution to the current

entrepreneurship literature and provides a framework to assist public policy makers and entrepreneurship educators alike.

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APPENDIX

<i>A</i>	<i>Ronstadt model</i>
<i>B</i>	<i>Morris et al. model</i>
<i>C</i>	<i>Ardichvili model</i>
<i>D</i>	<i>Course subject outlines</i>
<i>E</i>	<i>Administrator script</i>
<i>F</i>	<i>Pretest/Posttest survey</i>